



A  
TREATISE  
CONTAINING  
A PLAN  
FOR THE  
INTERNAL ORGANIZATION AND GOVERNMENT  
OF  
MARINE HOSPITALS,  
IN THE  
UNITED STATES;  
TOGETHER WITH  
Observations on Military and Flying Hospitals,  
AND  
*A SCHEME*  
FOR AMENDING AND SYSTEMATIZING THE  
MEDICAL DEPARTMENT OF THE NAVY.

BY  
WILLIAM P. C. BARTON, M. D.

SURGEON IN THE NAVY OF THE UNITED STATES, STATIONED AT THE  
NAVY-YARD, PHILADELPHIA, AND FORMERLY PHYSICIAN TO THE  
ARMY IN THE 4TH MILITARY DISTRICT; PRESIDENT OF THE  
PHILADELPHIA LINNEAN SOCIETY, AND

*PROFESSOR OF BOTANY*  
IN THE UNIVERSITY OF PENNSYLVANIA.

~~~~~  
*THE SECOND EDITION,*  
WITH EMENDATIONS AND ADDITIONS.  
~~~~~

PHILADELPHIA:  
PRINTED FOR THE AUTHOR,  
AND SOLD ONLY BY HIM.

1817.

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**DISTRICT OF PENNSYLVANIA, to wit:**

**BE IT REMEMBERED**, That on the twenty-seventh day of January, in the forty-first year of the independence of the United States of America, A. D. 1817, William P. C. Barton, of the said district, has deposited in this office the title of a book, the right whereof he claims as author, in the following words, to wit :

“ A Treatise containing a Plan for the internal organization and government of Marine Hospitals in the United States : together with Observations on Military and Flying Hospitals, and a Scheme for amending and systematizing the Medical Department of the Navy. By William P. C. Barton, M. D. Surgeon in the Navy of the United States, stationed at the navy yard, Philadelphia, and formerly Physician to the army in the 4th military district ; President of the Philadelphia Linnean Society ; and Professor of Botany in the University of Pennsylvania. The second edition, with emendations and additions.”

In conformity to the act of the Congress of the United States, entitled, “ An act for the encouragement of learning, by securing the copies of maps, charts, and books, to the owners and proprietors of such copies during the times therein mentioned.” And also to the act entitled, “ An act supplementary to an act, entitled, “ An act for the encouragement of learning, by securing the copies of maps, charts, and books, to the authors and proprietors of such copies, during the times therein mentioned,” and extending the benefits thereof to the arts of designing, engraving, and etching historical and other prints.”

**DAVID CALDWELL,**  
Clerk of the District of Pennsylvania.



TO

**DANIEL PARKER, ESQ.**

**ADJUTANT AND INSPECTOR-GENERAL**

**OF THE ARMY OF THE UNITED STATES.**

DEAR SIR,

TO you more than to any other individual am I indebted, for the standing this work now maintains—a standing which is not only flattering to me in the highest degree, but is a subject of legitimate pride. I should greatly dissemble did I withhold this confession.

Influenced by the recommendations of medical men, prefixed to the work, and by a very laudable desire to patronize any efforts made to benefit the publick service of our country—you brought this book to the notice of the government. The liberal patronage extended to it by Mr. Crawford, late secretary of war, and yourself, while it is highly gratifying to me, demands my publick acknowledgement. Since the encouragement I have received has been effected through your instrumentality, I beg leave to inscribe to you this Second Edition, in evidence of the high sense I entertain of the service you have rendered me.

As I have done this without your knowledge or consent, I crave the indulgence of your pardon for the liberty I have thus taken with your name.

Permit me to avail myself of this opportunity to tender you the assurances of my esteem and regard, and believe me to be,

Dear Sir, very truly your's, &c.

**WILLIAM P. C. BARTON.**

PHILADELPHIA,

*Jan. 1st, 1817.*

THE JOURNAL OF THE  
AMERICAN MEDICAL ASSOCIATION  
PUBLISHED WEEKLY  
CHICAGO, ILL., U.S.A.

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Sir,

*Adjutant and Inspector-General's Office, 15th October, 1816.*

THE Secretary of War has examined your Treatise, on the internal organization and government of Marine Hospitals, &c. and orders that it be distributed to the principal officers of the medical staff of the army.

I have to request, that you will direct one hundred copies of the work to be sent to me, as soon as convenient.

I am convinced that, in "this piping time of peace," our doctors will be able, with this treatise, to make great practical improvements in the department where the military service suffered most, in the early part of the late war; and in which an army of recruits, or militia cantonments, may again suffer, without practical knowledge of hospital arrangements.

I seize this occasion to offer you the new assurances of my very great respect and regard.

*William P. C. Barton, Esq.*  
*Surgeon U. S. Navy, &c. &c.*

D. PARKER,  
Adjutant and Inspector-General.

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Sir,

*Navy Department, June 26th, 1815.*

YOU will be pleased to receive of Dr. William P. C. Barton, fifty copies of his treatise on Marine Hospitals, and pay him for the same, at the rate of two dollars per volume, chargeable to the general contingent expenses of the navy.

I am, very respectfully, your obedient servant,

*George Harrison, Esq.*  
*Navy Agent, Philadelphia.*

B. W. CROWNINSHIELD.

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Sir,

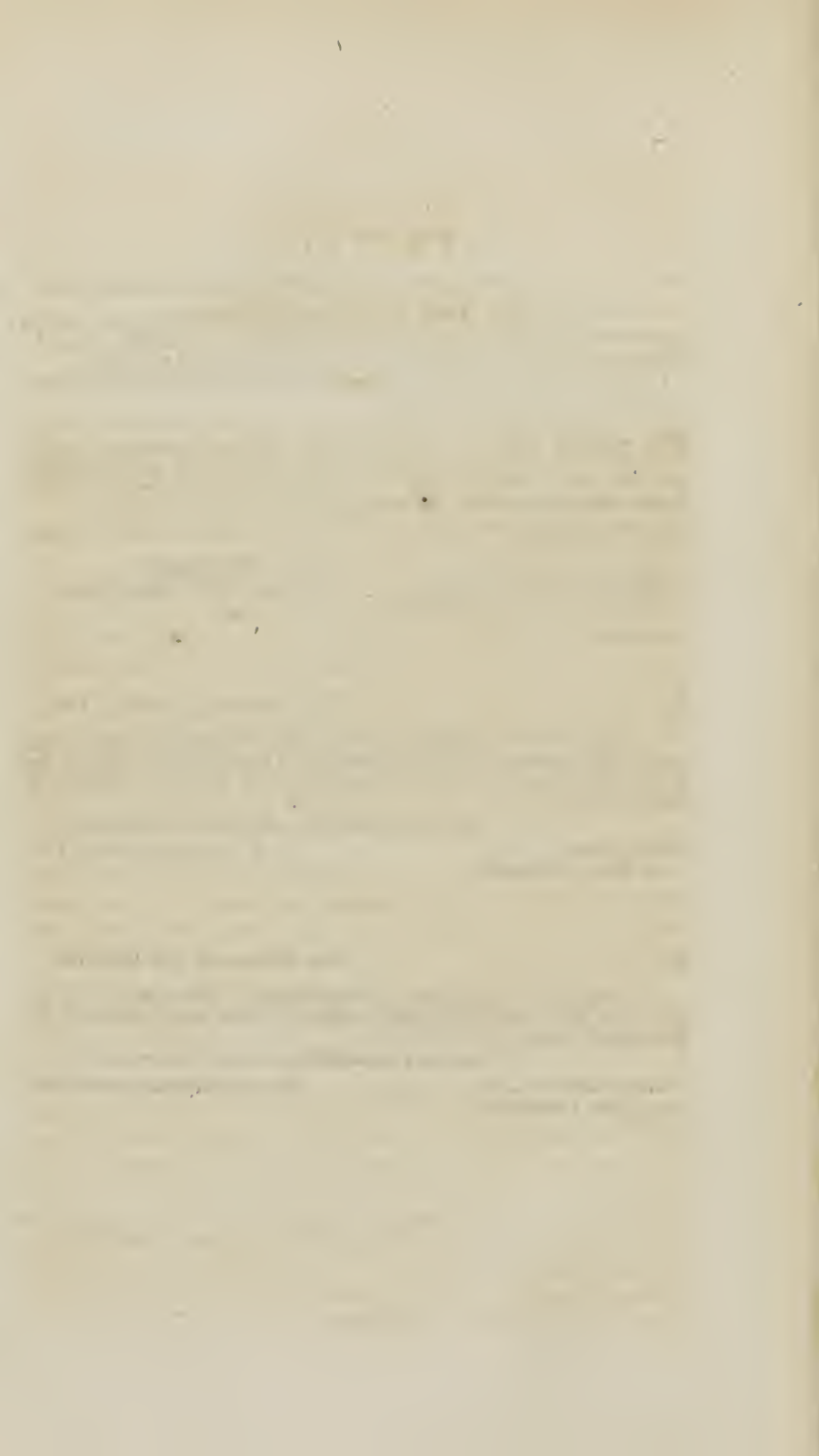
*Navy Department, June 27th, 1815.*

YOU will be pleased to send forty copies of Doctor Barton's Treatise to this place, and deliver the residue to Doctor Heap, subject to further orders, for the use of the navy.

I am, very respectfully, your obedient servant,

*George Harrison, Esq.*  
*Navy Agent, Philadelphia.*

B. W. CROWNINSHIELD.



# PREFACE

## TO THE FIRST EDITION.

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**N**EARLY three years ago, a law was passed by Congress, relative to the establishment of MARINE HOSPITALS in the United States. When at Washington in July, 1811, the secretary of the navy, Mr. Hamilton, requested me to throw together on paper such ideas as I entertained, respecting the proper and systematick mode of conducting institutions of this nature, as well as any such suggestions for the internal organization of the household, as might seem to me consistent with economy and health. Mr. Hamilton informed me, that he was required, by an article of the marine hospital law, to prepare, by the next meeting of Congress, a report, on the police and domestick arrangements of such hospitals; but that, conceiving the subject to be properly the province of medical men to treat of, he felt incompetent to the just consideration of it,—and that therefore he was induced to apply to such as belonged to the faculty to assist him.

The outlines of the plan proposed in the following pages, were accordingly thrown together, with such order and system as the limited time I had to devote to the subject, amidst the pressure of my professional duties on shipboard, permitted.

The report containing them, which was chiefly written during a tempestuous passage from Norfolk to New-York, in the *Hornet* sloop of war, with the ever to be lamented Captain Lawrence, and under the disadvantages too of sea-sickness and mental affliction, was certainly less perfectly digested, and more carelessly treated, than the importance of the subject demanded. But imperfect as it necessarily was under such unpropitious circumstances, I thought it my duty to transmit it to the secretary by the specified time. This was therefore done.—Subsequent and more mature consideration of the subject, has enabled me to render the memorial more worthy of the attention of those persons, for whom it was first designed, at the instance of Mr. Hamilton, viz. the Commissioners of the Marine Hospital Fund. With considerable additions, and I hope also with

some emendations not entirely unimportant—the original plan sent to the secretary is now presented in the form of a treatise, to the commissioners of the marine hospital fund, and the surgeons in the navy.

The second part of the work contains some miscellaneous observations on the medical department of the navy. I have attempted to devise a more systematick plan for conducting it, —and have ventured to propose a scheme, for checking the abuses which grow out of its present loose administration.

During the term of my sea-duty, I had many opportunities of seeing irregularities in this department, and the disastrous consequences attending them. These irregularities and abuses are those, the means of correcting and abolishing which, I have endeavoured to point out. If the propositions and suggestions exhibited in the few pages on these heads, that follow the treatise on marine hospitals, be thought worthy of adoption: and if, when executed, they shall be found calculated to achieve the object they have in view—I shall deem the five years I have devoted to the naval service, not passed in vain. Or if the exposition that I have made of the abuses in the medical department shall elicit from an abler and more experienced hand, any more feasible or efficient plan for accomplishing the reform and system I have had in view—my labours will be amply remunerated. I have been long enough in the navy to have its interests much at heart, even if I did not believe (which I certainly do) that its existence is vitally important to our national prosperity and honour. Whatever, therefore, my humble endeavours shall effect towards reforming and systematizing that department, without the efficient and able administration of which, the lives of thousands may be jeopardized or lost—whether this be by means that I have here proposed, or by inviting the attention of others to the subject—will afford me the liveliest gratification. The labour is arduous, but it is not the toil of Sisyphus:

“Dimidium facti, qui cœpit habet.”

*Prune-street, Philadelphia,  
February 1, 1814.*



# PREFACE

## TO THE SECOND EDITION.

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THE fate of this book is somewhat remarkable. It was written by the request of a late secretary of the navy\*, at a period when the youth of the author, (but then four-and-twenty) caused him to think of executing the task, with diffidence; and when he finally determined on performing it—to look with fearful apprehension for the reception which awaited the result of his labours. The work†, however, was flatteringly recommended by the late Professor Barton, by Professors James, Coxe, Dorsey, and Chapman, and by Doctors Hartshorne and Hewson, the latter now professor of comparative anatomy.

Notwithstanding these unqualified testimonials in its favour, supported by a very favourable review in this city, and an encomiastick notice by a literary gentleman of Paris‡,—the work lingered for a short time on publick view, and was then forgotten. He, by whose request it was undertaken, had passed from office to the retired walks of private life, whence he could not, had he desired, have rendered it any substantial service; and from his successor it never received, to the author's knowledge, even the compliment of a transient glance, much less that fostering protection and patronage to which the recommendations alluded to, and affixed to the work, indubitably entitled it.

An ineffectual attempt§ was made in March, 1814, to bring it to the notice of the naval committee of Congress; principally with a view to lay before its members a knowledge of the irregularities and abuses of the medical department of the navy; for the reform and correction of which the author had proposed what he believed a feasible scheme. It resulted, however, in an indirect reference of the business to the secretary of the navy, whose attention to it, as Mr. Lowndes in his letter to the

\* Paul Hamilton, Esq.

† The manuscript was transmitted to Mr. Hamilton, from Newport, R. Island, in November, 1811.

‡ Mr. Warden.

§ In this attempt, acknowledgment is due for the polite intercession of Charles J. Ingersoll, Esq. then a representative of this city.

author very justly remarks, would naturally be attracted by the *importance of the subject* treated of. It has been already mentioned, that Mr. Jones had not thought proper to bestow that attention on the work which, in the author's estimation, and the opinion of others, the importance of the subject demanded. Mr. Lowndes further intimated, that the naval committee could take no notice of, nor feel competent to decide on, subjects which involved professional knowledge. A copy of the work was sent to that gentleman. Had it reached him, which it appeared was not the case, he could have satisfied himself by a single glance at its contents, that subjects other than medical were pointed out as calling for reform; such too as could only properly come under the cognizance of legislators, and the reform of which could be accomplished by no other authority.

It is plain, from this exposition, that the author had but little reason to be satisfied with the present, or sanguine respecting the future reception of his work. Yet, though not insensible to the palsied touch which seemed to have reached it, candour compels him to acknowledge—that he never despaired of its ultimate success. He trusts he will be exonerated from the imputation of vanity, in making this confession, when he declares—that his hope was predicated on the recommendatory letters with which it had been honoured; and he totally disclaims the influence of that feeling of self-love which causes an author to consider his literary production as a part of himself, thus becoming wedded to its merits, and insensible, with true parental blindness, to its faults or imperfections. He has not been disappointed. Supported by such strength, the work has finally worked its own way into notice and favour. It has been patronized both by the navy and war departments, and purchased by their respective secretaries for the use of the naval and army surgeons: and although but three years have elapsed since its publication, a new edition is called for. What is the inference deducible from this statement? That the officers of government alluded to above, consider the work an useful *vademecum* for naval and army surgeons and mates.

For this estimation of its merit, the author takes this opportunity of rendering his thanks to those medical gentlemen, by whose passport it has at length gained admittance to the chambers of the great, after a chilling and tedious tarry at the portal, and many repulsive frowns from one of the servants in waiting.

No. 111, S. Ninth-street, Philadelphia,  
Feb. 1, 1817.

**PART FIRST.**



**A PLAN**

**FOR THE**

**INTERNAL ORGANIZATION AND GOVERNMENT**

**OF**

**MARINE HOSPITALS**

**IN**

**THE UNITED STATES.**



A PLAN  
FOR THE  
INTERNAL ORGANIZATION AND ADMINISTRATION  
OF  
MARINE HOSPITALS,  
IN THE UNITED STATES.

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SECTION I.

*Observations on the necessity for the establishment of  
such Institutions in the United States.*

ON the 26th of February, 1811, a law was passed in Congress, for establishing Marine Hospitals in the United States. This law required, that the money accruing from the execution of an act for the relief of sick and disabled seamen, should be paid to the secretary of the navy, the secretary of the treasury, and the secretary of war, for the time being, who were by this law appointed a board of commissioners, to be styled "Commissioners of Navy Hospitals." This money, together with the sum of 50,000 dollars, appropriated by the same law, (of 26th Feb.) out of the unexpended balance of the marine hospital fund, was to be paid to these commissioners, and was to consti-

tute a fund for navy hospitals. This fund was to be augmented, also, by all the fines imposed on navy officers, seamen, and marines, which were required to be paid to the commissioners of navy hospitals.

The commissioners were moreover authorised and required by this law, to procure a suitable place, or places, proper for navy hospitals, and, if the necessary buildings could not be obtained with the site, they were empowered to have such erected, with a due regard to economy, giving preference to such plans, as with most convenience and least cost, would admit of such subsequent additions as the funds would allow, and circumstances require.

The commissioners were required also, at one of the establishments, to provide a permanent asylum for disabled and decrepit navy officers, seamen, and marines.

For the purpose of conducting these hospitals, the law authorised and required the secretary of the navy, to prepare the necessary rules and regulations for the government of the institutions contemplated, and to report the same to the succeeding session of Congress.

It was likewise enacted, that when any navy officer, seaman, or marine, was admitted into any one of these navy hospitals, the institution should be allowed one ration per day during his continuance therein, which was to be deducted from the account of the United States with such officer, seaman, or marine; as also when any officer, seaman, or marine, entitled to a pension, was admitted into any navy hospital, such pension, during his continuance in the institution, was to be paid to the commissioners of navy hospitals, and deducted from the account of such pensioner.

The objects of this law then were, to authorise the establishment of one or more marine hospitals, and to



provide a fund for the purpose of defraying the necessary expenses of their erection and subsequent operation.

The method by which the fund contemplated was to be raised, was undoubtedly calculated to achieve every purpose designed by the law. It was founded in equity, and embraced in its operation such sources as could not fail to produce an influx into the hospital revenue, of very considerable amount.

Though two years have elapsed since the passing of this law, the end it was intended to effect has never yet been accomplished. The talents of that able engineer, Mr. Latrobe, were employed by the secretary of the navy,\* for the designing of an architectural plan of the buildings to be erected. This plan was admirably calculated for the erection of permanent and convenient edifices, to which, from time to time, as exigencies might require, or the hospital fund admit, additions might be made, so that when the whole was completed, it would present one entire and perfect building. In this plan he had exceedingly well combined the requisite economy, so far as compatible with the ultimate object of the law, with that simplicity, elegance, and convenience, which characterize all the works of this master architect. This plan met with the warmest approbation of the secretary of the navy, but was objected to by the other two commissioners, for those qualifications which ought to have entitled it to their favourable opinion, viz. its permanency and stability. The business therefore fell through, and the whole plan proved abortive.

The time however, has arrived, when we must view the establishment of extensive navy hospitals, as an

\* Mr. Hamilton.

event by no means remote or improbable, but in fact as necessarily connected with the augmentation of the navy, and the preservation of the health and lives of the officers and seamen who compose it.

An extensive and energetick naval establishment, cannot possibly be conducted without the institution of publick marine hospitals for sick and hurt officers, seamen, and marines; and asylums connected with them, for superannuated or decrepit pensioners of the service. We have no such institutions at this time, in any part of the United States. The very inconsiderable establishments in some of our sea-port towns, limited in extent, and unsystematically organized, deserve not the appellation of hospitals. In some of these there are medical officers, whose ability and experience would certainly enable them to superintend and govern very extensive establishments, if the appropriations by Congress for the building of such hospitals, were adequate to defray the expense of them. The spirit of exertion and enterprise then of these surgeons, would, if unrestrained by the necessity of such circumscribed expenditure in their operations, redound very much to the interest and welfare of the service.

Every naval station in the United States, presents a noble site for the erection of marine hospitals. Those of St. Marys and Norfolk, on the southern coast; the central ones of Philadelphia and New-York; and those of New-London, Newport, and Boston, on the northern coast, are peculiarly well adapted for hospital establishments. The liberality and munificence of a government cannot find more worthy objects of their favour, than that class of its citizens who voluntarily expose their lives and fortunes to the most imminent perils and afflicting accidents—for the safeguard, the protection, and defence, of the honour and prosperity of our

country. And when we view the present want of extensive institutions for the care of sick sailors, we cannot but hope, that the imperious necessity for their establishment, will, before long, elicit the attention of Congress ; particularly when we advert to the known impolicy of such deficiencies. They are impolitick, because it is natural to suppose, that men will be deterred from entering a service, in which no sufficient provision is made for alleviating the distresses it is liable to produce.

Nothing causes seamen to discover alacrity, promptitude, and faithfulness, in the performance of their severe and arduous duties, or contributes more to reconcile them to the comfortlessness, the hazardous chances and accidents, to which they are constantly liable in the service—than a certainty of being attended humanely and ably, by the superintendants of a medical department replete with every comfort and convenience for the sick and afflicted. Every one who has had an opportunity of mixing with seamen on ship-board, must be aware of this fact. While, on the other hand, the neglects, irregularities, or inability, of the medical officers, never fail to create discontentment and disgust. In the petition to the lords commissioners of the admiralty, made by the delegates of the English fleet at Spithead, in the ever memorable mutiny that prevailed in his Britannick majesty's navy in the year 1797, when the command of the whole fleet was usurped by the seamen, in consequence of what they deemed their grievances, one of the principal articles referred to the neglect of their sick on board the ships, and the embezzlement of such necessaries and comforts as were allotted by government to their use. This alarming mutiny could not be quelled, until these grievances were absolutely relieved ; and it was deemed prudent

and expedient to issue new orders and instructions from the office of sick and wounded seamen, respecting the medical department, the strict observance of which was required of the surgeons. Indeed, I have myself seen, among a number of sick seamen with whom I was left in charge at the navy yard of this place, where they were necessarily huddled into a miserable house, scarce large enough to accommodate the eighth part of their number—a spirit of impatience, and even of revolt, in those who were able to discover it, that was calculated to contrive the most serious injury for the service. So wretched was the hovel, and so destitute of every necessary comfort for sick persons, in the charge of which I was left with thirty patients, (although a surgeon had been between five and six years on this station) that every man who gathered sufficient strength, and was successful in getting an opportunity to effect his escape, absconded immediately.

The replies of these men, when I addressed them respecting the desertion of their comrades, were strongly expressive of their wearisomeness and impatience of such disgraceful accommodations; and their disgust and sense of grievance were uttered in terms, that convinced me the intention to desert was not confined to a few of them.\*

\* In justice to the present secretary of the navy, I must observe, that at this period he had but recently come into office, and upon my representation of the sick-quarters as above detailed, and stating the necessity of some better accommodations, he immediately acceded to my request, and wrote to commodore Murray on the subject. In mentioning thus publicly the disgraceful accommodations for the sick that appertained to this station, on Mr. Jones's accession to office, I am desirous that the blame or neglect should attach to the persons properly chargeable with them, and to exonerate such as were in no way connected with either. With this view I deem it proper to insert the two following letters.

Philadelphia, May 22d, 1813.

Sir,

The embarrassment under which I labour with respect to the accommoda-

These circumstances sufficiently prove the expediency of establishing proper and convenient hospitals, at every naval station of importance in the United States. Convinced as I am, that without them, our navy cannot prosper, I sincerely hope that Congress will

tion of a number of sick now under my care at the navy yard, has induced me, with the concurrence and advice of commodore Murray, to address you on the subject.

There are now in the very small building appropriated to the reception of sick, and which is calculated to accommodate with convenience only about eight patients, *twenty-four sick sailors*, who will probably be unfit for duty for some weeks. They are very much crowded in this small building, and I much fear, that this circumstance, in such a warm season, may be productive of disease. My object in writing is to suggest the *necessity* of some *temporary arrangement*, not only for the better accommodation of the men now sick, but for the reception of others who may become so.

The plan of this arrangement, of course, is left to your decision; but I would mention, that probably a suitable house in the vicinity of the navy yard might be rented for a month or two, until some more permanent accommodations could be provided.

Commodore Murray declines entering upon any measure of this nature without your instructions, and as I am at present exceedingly at a loss to accommodate these patients as comfortably as their diseases require, I beg the favour of your attention to the subject, when a leisure hour is at your disposal.

I am, sir, most respectfully, your obedient servant,

WILLIAM P. C. BARTON.

The Hon. WM. JONES, Esq. *Sec'y of the Navy*,  
Washington.

Navy Department, May 26, 1813.

Sir,

I have received a letter from surgeon Barton, on the subject of the sick in the navy yard at Philadelphia. I wish you to examine into the situation of the hospital with a view to the comfortable accommodation of the sick on that station; and if you deem it necessary, you will direct a convenient frame building to be erected on as reasonable terms as possible, in some convenient part of the yard, as remote from the ship-yard as may be, and in the interim, if it appears to you necessary for the good of the present sick, you will rent some convenient building in the vicinity, until that in the yard shall be ready to receive them.

Respectfully, your obedient servant,

W. JONES.

ALEXANDER MURRAY, Esq. *Commanding N. Officer*,  
Philadelphia.

A frame building was accordingly erected for an hospital.



speedily devise some plan, for raising and augmenting a sufficient fund to defray the expenses of erecting and conducting grand naval hospitals, at the stations, at least, of St. Marys, Norfolk, Philadelphia, New-York, Newport or New-London, and Boston.

With such an event in view, I have thrown together such rules and regulations for their organization and government, as will, I trust, facilitate the accomplishment of the end to be answered by such institutions.

## SECTION II.

### *Sketch of some of the Marine Hospitals of Europe.*

As much difficulty occurs respecting the *general* economy of these establishments, and the proper and sufficient salaries to be allowed to the respective officers belonging to them, I will, previously to entering into a consideration of the *minutiae* of arrangement, exhibit a brief sketch of the extent of some of the most important foreign naval hospitals, together with an enumeration of the officers appointed for the government and conduction of them, and the salaries appertaining to their stations.

A comparison then of the plan of any hospital or hospitals about to be erected in the United States, with the magnitude and internal police of transatlantic institutions of a similar nature, which have been long in effective operation, will tend to facilitate the designing of proper plans for the organization of those contemplated at home.

As to a minute and accurate description of the architectural plans of these different European establishments, I am unable to afford it—my observations and inquiries



having extended no farther than to their internal organization—in fact, to essentials. It is the business of the engineer to furnish such arrangements in the plans for his buildings, as will be productive of the healthiness of the wards, their airiness, and their proper exposure to the influence of the winds, &c. I have observed one thing, however, in which they are all alike: The buildings generally compose one grand body and two wings, so constructed, as to leave an area of considerable extent between them—the open side facing that quarter from which the milder winds generally blow.

They are all placed on situations in the vicinity of rivers which have a ready communication with the sea. This is to the English hospitals an object of great importance, since the continual state of naval warfare the British are engaged in, renders these sick establishments the receptacles of many wounded men, who after actions are sent home to them by a water conveyance.

The first great naval institution is the *Royal Hospital for Seamen*, at Greenwich. This hospital is situated about five miles from London-bridge, on the southern bank of the river Thames. It consists of four distinct piles of building. The first, called King Charles' Building, contains fifteen different wards, some larger and some smaller, but the whole calculated to accommodate 332 persons.

The second, or King William's Building, is divided into eleven different wards, which are likewise of various dimensions, but which contain in the aggregate, 559 persons. The third, or Queen Anne's Building, is divided into twenty-four wards, large and small, and accommodates 437 persons. The fourth, or Queen Mary's Building, contains thirteen wards of

different dimensions, most of them very large, and accommodates 1120 persons.

The number of beds then in King Charles' Build-

ing is,	332
in King William's ditto,	559
in Queen Anne's ditto,	437
in Queen Mary's ditto,	1120
Total,	2448

All these wards are appropriately and separately named.

In queen Mary's building there is a commodious chapel, and in different parts of the great fabric, apartments are provided of a convenient nature, for the governor and principal officers; and wards are properly fitted up for pensioners and nurses. These, together with officers' families, inferiour officers, and servants resident within the walls, amount to above 3000 persons.

The *infirmary* is a quadrangular brick building, divided into two principal parts; one for patients under the care of the physician, and the other for such as require the attendance of the surgeon. Each part is two stories high, containing a double row of rooms, being altogether in number 64, calculated to accommodate 256 patients. Each room has a chimney-place, with an aperture near the ceiling for the purpose of ventilation, and will hold conveniently four patients. This building likewise contains a chapel, apartments for a physician, a surgeon, an apothecary, with their respective assistants; and for the matron. Contiguous to this building is another, containing hot and cold baths for the use of helpless pensioners.

The school-room is contained in a spacious building

near the hospital, and is capable of holding 200 boys. It has a fine Tuscan colonade of great extent, which is intended for a shelter for the boys, and a play-place in bad weather. In the two stories above, are dormitories fitted up with hammocks for the boys to sleep in.

The establishment of *officers, pensioners*, is as follows :

		Salaries per ann.	
		L.	s. sterling.
A master and governour,	.	1000	
A lieutenant governour,	.	400	
Four captains,	.	272	each.
Eight lieutenants,	.	136	10 each.
A treasurer and receiver general,		200	
A secretary,	.	160	
An auditor,	.	100	
Two chaplains,	.	130	each.
A physician,	.		10 per day.
A steward,	.	160	
A surgeon and two assistants,		203	10
his assistants,		50	each.
A clerk of the checque,	.	160	
A surveyor,	.	200	
A clerk of the works,	.		5 per day.
An apothecary and one assistant,		93	10
assistant,		40	
Three matrons,	.	40	each.
A school-master,	.	150	
An organist,	.	60	
A butler,	.	25	

*Inferiour Officers, &c.*

Governour's clerk,	.	70
Deputy treasurer,	.	100

		Salaries per ann.	
		<i>L.</i>	<i>s.</i> sterling.
Two treasurer's clerks,	.	50	each.
Secretary's deputy,	.	60	
His clerk,	.	50	
Assistant to the clerk of the works,		90	
Servant to surgeon,	.	30	
1st steward's clerk,	.	70	
2d and 3d ditto,	.	50	
4th ditto,	.	50	
Clerk to clerk of the checque, one of,		70	
2d, 3d, 4th, ditto,	.	50	each.
Master brewer,	.	60	
Butler's mates, two,	.	15	each.
Messenger,	.	30	
Cook of the east kitchen,	.	40	
Cook's mates, two,	.	15	each.
Cook of the west kitchen,	.	30	
His mates, two,	.	15	each.
Scullery man,	.	20	
His mates, two,	.	15	each.
Porters, two,	.	15	each.
Barber,	.	12	

The governour and treasurer are appointed by royal patent. The rest of the officers by the board of admiralty, except the surveyor, the two receivers of the hospitals' estates in the north, and the clerk of the works, who are appointed by the general court of commissioners; the school-master and messenger, by the board of directors; and all the clerks by their respective superiors.

The number of pensioners maintained in the hospital at this time amounts to 2460. Every boatswain is allowed 2*s.* 6*d.* every mate 1*s.* 6*d.* and every private 1*s.* per week, for pocket money.

They are allowed for two years, one suit of blue clothes, a hat, three pairs of blue yarn hose, three pairs of shoes, four shirts, and a great coat, if necessary. Their diet consists of one loaf of bread of 16 ounces, and two quarts of beer, every day ; one pound of mutton, on Sundays and Tuesdays ; one pound of beef, on Mondays, Thursdays, and Saturdays ; and pease-soup, cheese, and butter, on Wednesdays and Fridays.

Such persons as desire to be admitted as pensioners, are obliged to make application to the admiralty office ten days, or more, previous to the examination day, which is the first Thursday in every month, where they receive letters directed to the proper officer at the navy office, for certificates of their time of service in the navy. These certificates are to be sent to the admiralty before the day of examination. The surgeon of the hospital attends the examination of the board, and such candidates as are deemed proper objects for pensioners, are recorded as such, and are to be sent to the hospital as the vacancies occur.

The out-pensioners, amounting at this time to upwards of 3,200, receive yearly allowances of 7*l.* 10*l.* 14*l.* and 18*l.* according to their length of service, or the peculiar nature of their cases. They are appointed in the manner of in-door pensioners. After their appointment, they are required to take their warrants to the treasurer's office in the hospital, where a ticket is delivered to them, by which they are empowered to receive their pension by quarterly payments, either there, or, if they live at a distance, from the collectors of the customs, or excise, in consequence of certificates signed and transmitted by the treasurer, and attested by the steward, or clerk of the checque.

There are, besides these out-pensioners,



	Sterling.	L. per ann. each.
10 captains, at . . .		80
15 commanders, at . . .		65
50 lieutenants, at . . .		50

who are also officers out-pensioners of this hospital.

There are 149 nurses, who must all be widows of seamen, and under the age of 45 years at the time of admission. They are required to take out certificates of their husbands' service in the navy, in the same mode as pensioners, and produce certificates of their age and marriage to the board of admiralty, (on the day of examination,) by whom they are appointed. Their allowances are as follows: Wages each, 11*l.* per ann. : those who attend the sick are paid 16*l.* 4*s.* : such as are employed to look after the helpless pensioners, 14*l.* 14*s.* : and such as are in the service of the boys, 16*l.* 4*s.* per ann. Provisions and bedding are furnished them the same as other pensioners, and a gray gown and petticoat yearly. When superannuated, they are allowed 20*l.* a year.

The establishment of boys consists of 200. It is intended for the maintenance and education of sons of seamen, and is solely under the management of the directors, who nominate, in rotation, the boys for admission. Prior to this, however, it must be made to appear by proper certificates, that they are *sons of seamen between ten and twelve years of age, objects of charity, of sound body and mind, and able to read.*

They are educated in reading, writing, and navigation; and after three years residence in the hospital, are bound out for seven years, to the *sea-service only*. For the better improvement of their talents, and that they may become able seamen and good artists, they once a year bring specimens of their performances before the directors, when *four* of them are allowed



the following premiums, according to their respective merit, viz.

- For the best projected map or chart, a Had-  
ley's quadrant, . . . . . 1st prize.  
For the best drawings after nature, the  
same, . . . . . 2d prize.  
For the next best, a case of mathematical  
instruments, . . . . . 3d prize.  
For the next best, Robertson's treatise on  
navigation, . . . . . 4th prize.

Their clothing is a blue cloth jacket and breeches, and blue serge waistcoat, with leather breeches, to wear on week-days ; checked shirts, and black velvet stocks, a small round hat, and blue worsted stockings. When bound out for sea-service, a boy is furnished with two suits of clothes, a hat, two pairs of shoes, three pairs of worsted stockings, three checked shirts, two black silk handkerchiefs, and a worsted night-cap ; a flock-bed and pillow, two blankets, a coverlet, and two checked pillow-biers ; and such religious and nautical books and instruments as are judged proper.

Their diet consists of fourteen ounces of bread, two ounces of cheese, and a quart of small beer, a day ; with half a pound of mutton for dinner, on Sundays, Saturdays, and the same quantity of beef on Thursdays ; rice-milk on Mondays ; plumb-pudding on Wednesdays ; and pease-soup on Fridays ; with an ounce of butter on Mondays, Wednesdays, and Fridays. Their meat is roasted on Sundays ; and on this and the other meat days, potatoes are allowed them.

All strangers who visit Greenwich hospital pay twopence each, and this income, which is not inconsiderable, is appropriated to the fund for the mathematical

school. For the better support of this magnificent hospital, every seaman in the royal navy, and in the merchant service, pays six-pence per month, stopped out of their pay, and delivered at the six-penny receiver's office on Tower Hill. On this account, a seaman who can produce an authentick certificate of his being disabled and unfit for service by defending any ship belonging to his majesty's British subjects, or in taking any ship from the enemy, may be admitted into this hospital, and receive the same benefit, as if he had been in his majesty's *immediate service*.

Out of all that is given for showing the great hall, which is a most magnificent apartment, only three-pence in the shilling is allowed to the person who exhibits it. The rest makes a fund for the yearly maintenance of not less than twenty boys, the sons of mariners either slain or disabled in the service of their country.

The chest at Chatham, a charity instituted for the benefit of wounded seamen, was removed from thence to Greenwich. It is placed under the management of four superiors, viz. first lord of the admiralty—comptroller of the navy—governour, and auditor of Greenwich hospital—a secretary—and five directors, viz.

	Salaries. L. per ann.
Lieutenant governour of Greenwich hospital, . . . . .	100
Two captains, . . . . .	80 each.
Two lieutenants, . . . . .	60 each.
An accountant, a surgeon, and assistant, ditto, and clerks. The vacancies of directors are filled up by the superiors.	

The Royal Naval Asylum is removed from Paddington-Green to Greenwich, and a superb building is

now erecting in the Park for the accommodation of the objects of this charity, who are to be the children of such British sailors and mariners as have served in the royal navy. There are to be admitted 800 boys, and 200 girls. The boys between the years of five and twelve, and the girls between the years of five and ten.

The principal officers are as follow : Governour, Auditor, Surgeon, Steward, Matron, and clerks. The whole of this institution is in the patronage and under the direction of twenty-six governours, of whom his royal highness, the duke of Cumberland, is president.

The royal hospital at Haslar, near Portsmouth, is situated on the water's side, opposite Spithead, the great rendezvous of the British fleet ; and about a mile and an half from the town of Portsmouth, and a quarter of a mile from Gosport.

It consists of an immense pile of brick buildings, composing a grand front, and two wings of great extent running at right-angles from the front, forming a very spacious area within. In the centre of this area is the chapel, a neat and appropriate building. There are numerous other buildings appertaining to this extensive establishment, within the walls, for the accommodation of the officers of the hospital, for store-rooms, &c. &c.

There is a water-carriage, by means of a small creek or canal, from Spithead-roads, up to the door of the receiving-room, for the easy and tranquil conveyance of wounded and sick seamen. The different buildings are divided into a great number of wards, all large, airy, and convenient. Each ward contains sixteen patients, and there is a distance of five feet between the beds.

This institution is conducted by the following officers :

L. s.

A governour, who must be a post-captain, with a yearly salary of	800	
Two physicians, who must belong to the navy, with a salary, one of	766	10
The other, with a salary of	600	
Three surgeons, with	500	each.
One assistant-surgeon,		6 per day.
Two hospital-mates,		5 per day.
One steward,	350	per ann.
One agent,	350	
One dispenser,	300	
One chaplain	300	

Besides numberless inferiour officers and servants.

This hospital is calculated to accommodate 1500 patients; but on an emergency, it will very well contain 2000. When there are a great many patients in the hospital, each physician is allowed *one* assistant for every hundred men he may have under his charge; and each surgeon, *two* assistants to every hundred men. This hospital is one of the two grand *depots* for medical stores, utensils, comforts, &c. &c. furnished to the ships of war.

The royal hospital at Plymouth, is likewise a spacious and stupendous collection of fine buildings. It consists of ten distinct piles of structure, in stone, all conveniently arranged, so as to admit the free passage of air into every ward in the hospital.

It is delightfully situated about half way between the towns of Plymouth and Plymouth-dock, at a small town called Stone-house. It has, as well as Haslar hospital, a water-carriage from Plymouth-sound, so that the sick and hurt seamen can be safely landed at the door of the receiving-room, without any danger accruing from motion.

This establishment is pretty nearly similar in its internal economy and arrangements, to that at Haslar. It is the second grand depot for medicines and medical stores, &c. for the English naval shipping.

It is divided in a number of wards, containing each fourteen patients, and the beds so arranged, that there are five and a quarter feet of space between each bed. The wards are all well ventilated, and the hospital contains from 800 to 1200 patients.

It is governed by the following officers :

A governour, (post captain,)	}	Salaries as at Haslar.
3 lieutenants,		
2 physicians and 2 assistants,		
2 surgeons and 3 assistants,		
1 dispenser,		
1 agent,		
1 steward,		
1 chaplain,	}	

Together with other petty-officers, servants, &c.

I ought not to omit to mention, that both these hospitals are furnished with fine vapour, hot, and cold baths, for officers and men; and each with a commodious room for performing operations in.

### *Chelsea Hospital.*

There is a royal hospital at Chelsea, a fine village situated on the northern banks of the river Thames, a mile westward of Westminster, for the support of wounded and decrepit soldiers of the crown.

It consists of a vast range of buildings, that form three large squares. The expenses of this establishment are defrayed by the poundage deducted from the army; deficiencies being made up by parliament.



It is governed by the following officers-commissioners, who are ten in number, viz.

The president of the council.

First lord of the treasury.

Two secretaries of state.

Paymaster general of land forces.

Secretary at war.

Two comptrollers of the army.

The governour and lieutenant-governour.

### *Military Officers.*

	Salaries per ann.
General—governour, . . .	L 500
General—lieutenant-governour, . . .	400
Major, . . . . .	250
Adjutant, . . . . .	100
The treasurer is the paymaster-general for the time being, to the land-forces.	
His deputy, . . . . .	not known.
His clerk, . . . . .	do.
Two chaplains, . . . . .	100 each.
Secretary and register, . . . . .	} Salaries not known.
Two clerks, . . . . .	
Magistrate to attest the invalids and out-pensioners, . . . . .	
Physician, . . . . .	100
Surgeon, . . . . .	100
Two mates, . . . . .	} Salaries not known.
Apothecary, . . . . .	
Comptroller, . . . . .	
Steward, . . . . .	
Truss-maker, . . . . .	
White wardrobe-keeper, . . . . .	
Comptroller of the coal yard, . . . . .	



Organist,	}	Salaries not known.
Clerk of the works,		
Master-lamp-lighter,		
Master-butler,		
Master-cook,		
Second-cook,		
Under-cooks, two,		
&c. &c.		

The present number of pensioners of Chelsea hospital amounts to 503, who are all provided with clothes, diet, washing, lodging, firing, &c. and have one day's pay, in every week, for spending-money. There are at present 12,000 out-pensioners, who have each a yearly stipend of 12*l.* for the purpose of their support.

The candidates for admission into Chelsea, are required to bring certificates from their superior officers, that they have been maimed or disabled in the service of the crown, or that they have served the crown twenty years ; which must be proved by an inspection of the muster-rolls.

Besides the sum paid annually out of the poundage of the army for the support of this hospital, one day's pay of every officer and private, is deducted each year, and appropriated to the funds of the hospital. This deduction brings in annually, in time of war, a revenue of 13 or 14,000*l.* sterling.

The emperor Napoleon's marine hospital at the city of L'Orient, is one of his best naval establishments, though it is small. It is under the general superintendence of the *military Prefect* of the city, who is a kind of civil officer likewise.

It is attended by one physician, three surgeons, and three assistant-surgeons. These all belong to the marine establishment, and are named, the surgeon, *chi-*

*rurgien-major* ; and the assistant-surgeons, *seconds-chirurgiens*. There are other assistants equivalent to hospital-mates. The assistant is termed *aide-chirurgien*, and one always is attached to a marine hospital in France.

The emperor's marine hospital at Cherbourg, is exactly a miniature imitation of the English hospitals at Plymouth and Haslar. Its officers are the same in number and name as those belonging to the naval hospital at L'Orient.

There are other hospitals of smaller note in the British naval establishments, than those already specified, which it may not be improper to notice briefly here, with a view to exhibit the number of medical and other officers thought necessary for their operation.

Forton-prison hospital, is intended for the accommodation of French prisoners of war. Its officers (medical) belong to the navy. This hospital is situated near to the town of Portsmouth ; it has a surgeon, a dispenser, four hospital-mates, a clerk, a steward, and a matron.

The royal naval hospital at Deal, has a governour (a lieutenant of navy) a physician, a surgeon, an agent, a dispenser, and a clerk.

The salary of the governour is,	<i>L</i> 375	per ann.
of the physician,	-	650
of the surgeon,	-	550
of the agent,	-	290
of the dispenser,	-	290
of the clerk,	-	156

The royal hospital at Yarmouth, in the Isle of Wight, has a governour (a lieutenant) a physician, a surgeon, and a dispenser. The salaries are the same as at Deal. This hospital, though small, is as well organized as any I had an opportunity of vi-

siting. I was informed there, that when any number of sick was admitted into the hospital, an assistant-surgeon was ordered to attend likewise.

At Paignton, there is a surgeon, who is agent—a dispenser, who is assistant-surgeon—an under-steward, a chaplain, and a matron.

In the royal navy-yards, a surgeon is stationed, who is likewise a physician. Those stationed at the royal yards of Depford, Woolwich, Chatham, Sheerness, Portsmouth, and Plymouth, as well as those in the yards at Jamaica, Halifax, and the East-Indies, have all an additional sum besides their pay, though not so much as the surgeons of hospitals.

### SECTION III.

#### *General remarks on the establishment and administration of Naval Hospitals in the United States.*

In the establishment and organization of marine hospitals in the United States, two objects of importance present themselves to our consideration. First, the accommodation of the sick to be received in them, with the necessary comforts and conveniences for their condition, and with the ablest professional attendance : and, secondly, the accomplishment of these ends, compatibly with the grand desideratum—economy. With a design to the realization of these objects, I have in the following pages, proposed such regulations as I deemed most likely to contribute to the end in view ; and I have endeavoured to prove the necessity, that both a physician and a surgeon should be attached to every naval hospital of any considerable compass. I cannot conceive, that the duty of a well regulated, judiciously organized, and extensive institution

for the relief of sick and wounded seamen, can be advantageously conducted without these two professional men at the heads of their respective departments, aided by a sufficient number of medical and surgical assistants.

For the accomplishment of the second object, I have proposed such regulations in the departments of the dispenser and the agent, for furnishing not only the hospitals, but the United States vessels of war, with their necessary medicines, &c. &c. as will, I think, be productive of a great saving in the medical department of the navy, without incurring in the business of the agent and dispenser, a much greater expense than will necessarily attend their operations for the hospital.

It has been proposed by Turnbull, an English naval surgeon of eminence, that lectures on anatomy, surgery, and clinical practice, should be read in the grand naval hospitals of Haslar and Plymouth, to a class of naval medical students, by the physicians and surgeons of these hospitals. As these persons are generally officers who have served for a considerable time in the navy, he naturally concludes, that they are peculiarly well qualified to instruct those about to enter on the same career. He intended, by this plan, to render these hospitals *schools of naval surgery*; and proposed that all candidates for situations in the medical department of the navy, should have attended the practice and lectures of the hospitals, or one of them, at least two years previous to his receiving an appointment in the navy. The object was, that young men should enter the medical sea-service, in which they sometimes hold very important and responsible situations, not mere tyros in their business, but, on the contrary, well versed in what may be denominated

naval medicine and sea-surgery ; but intimately acquainted with the nature and treatment of those diseases which are incidental to a sea-faring life. The proposition of this able writer on naval medicine, appears to me an extremely judicious one, and productive, if executed, of all the ends, the accomplishment of which is contemplated. How far it may be serviceable in suggesting a hint for the arrangements in the medical department of our hospitals, I leave to the judgment of the naval commissioners to determine.

Marine hospitals in the United States, should, if they be of the extent contemplated in the following pages, contain the grand store-rooms for the deposit of all articles used in the medical department of the navy ; and in so far as any of these articles can be prepared or manufactured in the dispenser's or other departments of the hospital, it should be done. Thus will the business of the dispenser and the agent, not only be carried on with the greatest economy, for the uses of the hospital, but rendered subservient to other important purposes, and productive of a considerable saving to the government. The profits of the apothecary and the grocer, which are enormous on all articles vended by them in small or retailed quantities, will be saved, on all commodities, drugs, &c. consumed in the hospitals and publick ships.

The general administration of marine hospitals should be of a military nature. The subordination among the higher officers, should be the same which appertains to the naval service ; and all misdemeanors of any consequence which they may commit, should be cognizable before a court-martial, and the offenders punished as the court should decide. Slight offences and irregularities of these officers, might be



brought under the cognizance of the officer highest in authority in the institution ; and the offending person subjected to such punishment or penalty as he might deem expedient to impose or exact.

The salaries of the different officers should be as liberal as is consistent with a due regard to economy. The medical officers, particularly, should be allowed such ample compensation, that they would have no inducement, nor be subjected to the necessity of resorting to private practice, in order to support themselves or their families. All business extraneous to the duties of the hospital, tends to estrange the officer from a rigid attention to the benefit of the publick service.

All the officers of the institution should be furnished with houses or apartments within the limits of the hospital, sufficiently commodious for their residence. When the appointment of medical men to these institutions is made, as in the British service, a reward for merit and long service at sea, an inducement will be held forth to professional men of talents and ability, to enter and continue in the service.

The respectable footing on which surgeons and physicians in the British navy are now placed, together with an adherence to the just principle of advancement to hospitals, according to merit and term of sea-duty, has induced many of the first medical men of England and Scotland to devote their time to the service of their country.



## SECTION IV.

*Of the proper situation and construction of Navy Hospitals.*

In warm climates and in temperate latitudes, a dry and airy place, at a good distance from marshes or large and thick woods, and out of the reach of winds that blow over such places, should be chosen. If possible, it should be on an elevation, protected from the inclement winds; fronting the south or west, and having a good command of water. Much depends upon erecting hospitals in proper situations, as regards healthiness; and the accounts of British naval writers are replete with instances of the fatal effects of establishing hospitals in damp or marshy situations. If convenient, there should be a water-carriage up to the receiving door, (afterward to be mentioned) for the purpose of conveying patients without motion from ships to the hospital. This would set forth the propriety of erecting the hospitals in the neighbourhood of rivers, which communicate with the sea by a ready conveyance, and whose borders are not judged unhealthy. This, however, is a consideration which must be influenced by circumstances, of which the engineer employed to draw the plans of the hospital, is the most proper judge.

Back of the buildings there should be extensive and open courts. These should be appropriated to the use of such of the patients to walk in, as are able to take exercise. Connected with these there should be a covered walk, which might be used in bad weather, or as a shelter from the fervid rays of the sun in summer. These courts and walks should be furnished

with benches. Kitchengardens should be connected with the hospitals, for the purpose of raising the vegetables consumed in them, where the ground belonging to the establishments will admit of them.

The privies should be as far removed from the hospital as convenient, and ought to be constructed with the greatest care, otherwise they will be apt to become nuisances. They seldom fail of proving so to hospitals, or camps, when they are not so contrived that their contents can be carried off by a drain, and the foul air arising from them be conveyed to such a height in the atmosphere, as to prevent the possibility of contaminating the surrounding air. When the pit is very deep, the danger from this cause is less; and when a drain is formed for the purpose of carrying off the soil, the air in the vicinity of such privies is seldom so much infected, as when this contrivance is not attended to, or is impracticable. When these conveniences can be erected over natural or artificial rivulets, of a pretty rapid current, and which communicate with, or enter into creeks or rivers by a channel uninterrupted or broken by rocks or other hindrances, the plan of constructing them so as to profit by these streams of water, is infinitely preferable to that of digging pits.

When, however, circumstances render this last method the only practicable one, and when the extent of the buildings requires many privies, as is the case in large hospitals, they should be connected together, but subdivided, with a separate access to each, and contrived so that the soil may fall into one drain or pit of extensive compass, which should be kept continually full of water. At the top of this pit should be a covered drain, communicating with a stream of water. Hot lime should be thrown in as often as may be deemed necessary. This dissolves the soil sufficiently to ad-

mit its passing out through the drain at the top, as the water rises in the pit.

From the top of the pit, a vent, or tunnel, should be carried to a considerable height above the roof of the privies, to carry off the foul air, and dissipate it in the atmosphere at such a distance above the surface of the ground, that it may not be offensive.

The number of rooms or offices appertaining to an hospital, and necessary to its health and convenience, are as follow :

Dry and large airy cellars.

A bake-house.

A kitchen, and scullery adjoining it.

A larder ; (two or more, if the hospital be extensive.)

Three laundries : 1. A wash-house for washing foul-blankets, woollen-clothes, and the like ; 2. another for cleansing the foul linen and bandages of the hospital ; and, 3. a drying-room heated by a stove, or flues underneath, from the cellar—and, adjoining and communicating with it, an ironing and mangling-room.

A receiving-clothes-room, for depositing the clothes belonging to the patients.

An hospital clothes-room, for the deposit of clean hospital apparel, bed-clothes, mattresses, pillows, &c.

A receiving-room, in which the patients are to be examined by the physician or surgeon, previous to their admission into the wards of the hospital.

A dressing-room, adjoining it, in which the patients are cleaned and dressed before they enter the wards they may be assigned to.

Warm, cold, and vapour baths, for patients ; and distinct apartments containing the same for officers.

Store-rooms for the hospital furniture, utensils, &c.

not actually in use ; and for the preservation of medicines, necessaries, &c. to be furnished to the ships of war.

Wards for the sick, and water-closets adjoining them.

A refectory.

A laboratory.

An apothecary's shop, or dispenser's apartment.

An operation-room.

A dissecting-room.

A dead-house, for the laying out of the dead. This should be a small building separate, and at some distance from, the main building, into which the patients that may die should immediately be removed, from the wards.

A chapel-room, for sacred worship.

A council-room, for transacting the publick business of the hospital.

Lodging-rooms for the governour, lieutenants, physician, surgeon, and their assistants.

Ditto, for the dispenser and his assistant, the steward, and all the subordinate officers and servants belonging to the institution.

Different arrangements may be made for lessening the number of these offices, when the hospital is small ; and in such case, the operations appertaining to the different rooms, can best be accommodated one with another, when the exact extent of the hospital is known.

The plans for the minute and particular structure of these offices, it is the province of the architect to devise. I will, however, make two general observations : first, that the economy of fuel, both by the use of steam and soup-digesters, should be consulted in the construction of the kitchen ; 2dly, that the larders should

be so planned, that they cannot become too moist, which would cause the provisions to spoil ; and that the ravages of rats, mice, and vermin in them, may be prevented. For these purposes the floors should be covered with a thick coat of mortar.

## SECTION V.

### *Of the structure of wards.*

As the sick wards of an hospital are the most important parts of the building, we should profit by the best experience in constructing them. Their healthfulness and convenience depend originally on three circumstances, viz. their judicious position as respects exposure to sun, light, and air ; their proper and efficient ventilation ; and their capableness of being heated in the winter season, to an equable and unvarying temperature.

With a view to the first object, the wards should be airy, and, if long, should contain two or three open chimney-places. The windows and doors should be close, and those on the north and east sides of the building, protected from the inclement winds by an arcade, or some other similar structure.

There ought to be separate buildings containing wards for the venereal patients, and those afflicted with fluxes, infectious fevers, and the like. By means of these wards being detached from the main building, and a separate set of nurses and attendants appointed to wait on them, all danger from contamination will effectually be prevented.

The wards should be kept pure and clean, by a removal of all things calculated to render them other-



wise. Each one should have a water-closet adjoining it, and the patients should be compelled to make use of this, if they be able to leave their beds to go to it. Or there might be one water-closet constructed on each floor of the building, to which the patients of that story should repair.

Mr. Latrobe has proposed, instead of water-closets, the construction of a small apartment on each floor of the hospital, which he has denominated a *tub-room*. The design of this room is, to contain a number of convenient vessels for the use of such patients as are able to walk from their wards; and also a large vessel or tub, into which the contents of the smaller ones, as well as those of the utensils used by patients who are not in a condition to repair to the tub-room, are to be emptied. This tub is then to be lowered by a rope at an early hour every morning, and late at night, or, if judged expedient, only at night, into a cart or wheel-barrow, and removed to the pit of a privy, or other proper place in the yard. If I mistake not, when I conversed with Mr. Latrobe on this subject, the reason he gave me for the substitution of these tub-rooms for water-closets, was, that the disagreeableness of the latter, arising from their unpleasant smell, would be obviated by this contrivance. Though, with the highest opinion of the ingenuity and skill of my old master, in matters of this nature, I should be very much disposed to accede to the feasibility of any scheme of his devising, even should it be in *seeming* opposition to my experience of its usefulness; yet I cannot, in this case, subscribe to the plan of this very able architect; first, because I bear fresh in my memory, a fact related to me by the surgeon of the royal military barracks between Cowes and Newport, in the Isle of Wight. When I passed through his sick-quarters with him, I



found five cases of true typhus gravior, confined very ill, to their bunks. Upon my inquiring of him whether that disease was prevalent among the troops then stationed there, he informed me that it was not; that on the contrary, they were generally healthy; that these men belonged to the highland-regiment, and were, from being long accustomed to the peculiar dress of that regiment, possessed of sound and robust constitutions; and that he had reason to believe their disease was induced by the infected air of the *closet-room*, which adjoined the apartment in which this mess of five men was quartered. This room was appropriated to a purpose similar to that of Mr. Latrobe's tub-rooms; and the surgeon assured me it was generally kept clean.

This one fact is sufficient of itself, to make me hesitate about conceding to the usefulness or healthfulness of the tub-rooms, as they are at present planned. But it does not stand alone. The mischief resulting from an exposure to the odour of fæces, or any other fœtid or offensive matters, is well known to all persons in the habit of visiting wards of an hospital or sick rooms.

In the second place, I would remark, that if proper care and attention be bestowed on the construction of water-closets, they may be kept perfectly pure and healthful, and entirely free from the offensiveness, which indeed is too frequently connected with them. In most of the larger inns of England, the water-closets are made under the main roof. But they are so carefully constructed, that no person could tell that any such offices were in the building. I have lodged in a room adjoining one of these closets, and could perceive nothing whatever offensive proceeding from it.

If Mr. Latrobe's plan be adopted, I think it ought to be improved in this way. Let the room or rooms be

contained in a small building detached from the main edifice, and communicating with the entries of this, by means of a corridor. This building should have a tunnel from the apex of its roof, carried to a considerable distance above it. Tub-rooms, thus contrived, instead of being made in the main building and the vicinity of wards, would be not only useful, but could be employed under circumstances where the introduction of water into the second and third stories of the hospital, for water-closets, would be difficult or impracticable.\*

## SECTION VI.

### *Of the construction of the Bedsteads, and their arrangement in the Wards.*

The spaces allowed for the beds, very much depend upon the loftiness or lowness of the ceilings, and vary with the variations in the height of these. If they be moderately high, (that is, about ten or twelve feet) eight, or eight and an half feet square;—or, if more lofty, (say about fifteen feet,) eight feet by seven ought to be allowed for every bed. But let the height of the ceiling be ever so great beyond fifteen feet, the minimum of space that can with safety be allotted to a single bed, is six feet square. This will allow of a small table or chair being placed between each bed, for the use of the patient, and will leave sufficient room for the passage of the physician or attendants at each side of the bed. If the beds be arranged on each side of a ward, with a passage between their foot-part, that is, through the middle of the room, this thoroughfare should not be less than twelve feet wide, and, if

\* During my residence in the Pennsylvania hospital, I had frequently occasion to regret the want of some such contrivance as this. Should this passage meet the eye of any of the managers of that institution, I hope they will not deem the hint unworthy of their notice.

the size of the ward will admit it, it would be advisable to leave it fifteen or eighteen feet in width.

The bed-steads, whatever their construction may be, should be elevated at a considerable distance above the floor, that is, as high as is compatible with the convenience of the patient in getting in and out of bed. This arrangement contributes very much to the cleanliness of the wards, and, indeed, the beds themselves, and is at the same time more consistent with the free circulation of air throughout the apartments, than the plan of placing the bedsteads scarcely fifteen inches above the floor. The propriety of elevating them will be obvious, when we advert to the circumstance of the under part of the bedstead being the place of deposit, in violation of every regulation to the contrary, not only of spitting-boxes, and pots-de-chambre, but also of dirty shoes and boots, foul clothing, &c. belonging to the patients. When the view underneath the bedsteads is clear, the nurses and orderly-men will have no excuse for permitting the patients to lumber the floor with these unseemly articles.

The bedsteads should be six feet in length, and not less than three in width, nor more than four. They should be constructed with a foot-board about seven inches above the sacking-bottom, or cross-panes, and a head-board at least eighteen or twenty-four inches in height.

In the French service, all these arrangements are established by edicts of the emperor, and it would be well for us to imitate the nice attention to economy and health with which they are devised, and the precision and strictness with which the execution of them is enjoined.

The following are the regulations respecting the dimensions of bedsteads, and their arrangement in the

wards, which appertain to the military hospitals of France.

For the bed of a single person, the bedstead must be of the following dimensions.

					mètre.	centimètres.
Inward length,	-	-	-	-	1	94
Breadth,	-	-	-	-	0	97

### *Stanchions.*

Height of the head,	-	-	-	1	27
Height of the foot,	-	-	-	0	73
Thickness at the head and foot,	-	-	-	0	8
Breadth of each face or pane,	-	-	-	0	23
Thickness of ditto, ditto,	-	-	-	0	23

The four panes are fixed in the stanchions by tenons, mortices, and pegs.

The pane of the head may be only half the breadth of the other two ; but it must be surmounted by a head-board of a plain plank, rising as far as the shelf, under which it ought to be so tight, that the head-board of the same thickness as the shelf, ought to form a pane joined with tongue and plough.

### *Shelves.*

			mètre.	millimètres.
Breadth,	-	-	0	175
Thickness,	-	-	0	12

Those shelves nailed on the stanchions of the head, have two edges of 54 millimetres, and are supported by two square pieces or brackets.

The panes of the bedsteads are raised at 400 millimetres above the ground, and each lateral pane bears up a bracket of 27 millimetres, which is strongly nailed to receive six planks to form the bottom.

The bedsteads are made with oak-wood, except the

bottom-boards, which are the only ones allowed to be sap-wood. In countries where the oak-wood is too dear, any other kind of wood may be employed, provided it be hard.

In every ward, the single beds must be two feet asunder; the double beds two feet and an half apart. When the ceilings are less than ten feet in height, the double beds must not be less than three feet apart. At all times, each row of beds must be distant at least two metres; and if circumstances should render it necessary to alter this arrangement, it should not continue otherwise longer than twenty-four hours.

Whatever be the size of the wards, it is positively prohibited to establish a row of beds in the middle. No patient is to be put in a double bed, when the physician has ordered a single bed for him.

The permanent and temporary hospitals of the interior, generally use complete furniture for the bedstead, consisting of a straw-bed, a mattress, and a blanket.

Bedsteads, or couches, are used in the permanent hospitals. Their number is not regulated by the size of the hospital, but the number of sick to be accommodated.

In the temporary and permanent hospitals, each bed is furnished with three pairs of sheets; and each patient is allowed four shirts, four night-caps, two woollen caps, a great-coat, and two blankets, for the winter.

Each bed must have a small table at its head, for the convenience of the patient; also, a small moveable board, for putting his plate of food on.

There must be two bathing-tubs in a permanent hospital, for every hundred of wounded or sick soldiers; one, for every fifty of those infected with the itch; and



one, for every twenty-five affected with the venereal disease. If they be made of wood, they must be painted and varnished inside and outside.

Each patient must be provided with a plate, a porringer, a middle-sized pitcher for his common drink, a larger one for his ptisan, and a pot-de-chambre. Those who require them, may likewise be furnished with a basin and a taper.

The cloths which are used for spitting, must be changed every day.

Such patients as are too ill to leave their beds, are to be supplied with close-stool-chairs, which are to be changed as often as necessary. They must always contain some clean water. The seat must be well cleaned after use, and now and then be rubbed with oil, to prevent it from absorbing the moisture, and thus becoming damp.

Near to each ward there should be a fountain-tub or bucket, with a stop-cock, which must be filled every morning early with clean water. This arrangement is to enable the patients to wash their faces and hands as often as requisite.

## SECTION VII.

### *Of Dress, Bedding, &c.*

The hospital should be abundantly stocked with shirts, trowsers, and jackets, of raven's duck, and sheets and pillowcases of cotton. There should likewise be a great number of caps; all of these articles should have the words *U. S. Naval Hospital*, printed on them with large types and printers' ink, which very well stands frequent washing. Each patient should be furnished with a suit of hospital apparel and a cap, upon his entering the house; his own clothes, which



should be deposited in the clothes-room, as mentioned under another head, are to be delivered to him upon his leaving the hospital ; and care should be taken that he does not purloin any hospital-clothes. I have seen seven hundred patients in an English hospital, all dressed alike, from the hospital-wardrobe. This plan contributes very much to the health, cleanliness, and comfort of the patients, and also to the neat appearance of the establishment.

The beds should be mattresses of hair, or good flock. They should be kept dry and clean ; for the accomplishment of which purpose, they should be occasionally opened and examined, as mentioned in another place. The sheets, pillowcases, and coverlets, should all be marked in the same manner as the clothing ; and great care should be taken by the nurses to keep them clean and dry.

The table-linen, towels, &c. &c. should likewise be marked in the same manner. This plan will prevent thefts, or at least lead to the detection of any thing stolen from the hospital.

In the royal hospitals in England, all the articles just specified, have a stamp of what is properly styled, "*the king's cross*," and vulgarly, "*devil's bit*," put on them, in addition to the name of the hospital. This plan effectually prohibits thefts ; for all persons in whose possession any articles are found, bearing a stamp of the *king's cross*, if they are unable to give a satisfactory account of the manner in which such things came into their possession, are liable to *transportation*, by a law to that effect. It would be well to have some particular mark of this nature, to identify, and prohibit the theft of, all U. S. hospital articles.

The regulations in the French hospitals, respecting beds, bedding, and dress, are as follow :

The square measure of a straw-bed for a single person, ought to be 4 metres 75 centimetres, so that being filled up with 20 or 25 kilogrammes of straw, it may present the same dimensions both in length and breadth as the bedstead inwardly.

The square measure of the mattress, for a single person, is 4 met. 52 centim. so that, when furnished with wool and hair, it may present the same dimensions as above.

The bolster must be 9 decim. 7 centim. in circumference, and as much in length ; its making up, as well as that of the mattress, is the same as for a bedstead for two persons. The weight of the bolster must be 2 kilo. 44 decagrammes, and the mattress 12 kilo. 23 deca. both together 30 pounds, including the linen-cloth.

Blankets must be 2 m. 54 or 59 cen. in length, by 1 m. 78 c. in breadth.

They should be made up with wool of a good quality, long, evenly spun, without any mixture of thread, or defective matter, and especially that known by the name of *avalies* (wool taken from a sheep that has been killed). The contexture must be well twisted and tight, so as to suffer at the fullery but little shrinking. They must be furnished with a sufficient quantity of substantial wool, in short, conformable to the pattern agreed upon by the minister, and to which ought to be affixed the seal of the central directory of the hospitals. The mark of the provider is interwoven in the woof.

They must be paid for by the weight, and weighed quite dry, without any ropes or pack-cloth—no more than five can be put on the scale. If the weight be under 3 kilogrammes for each blanket, they must be rejected. If over 3 kilo. 400 gram. they may be admitted, but only paid at the rate of the last weight.

The breadth of the sheets for a single person must be about 1 m. 80 c. and it cannot be less than 1 m. 67 c. The length must be 2 m. 90 c.

For beds for two persons, the bedstead, raised above the ground, 4 decim. must be 1 m. 30 c. in breadth, by 1 m. 94 c. in inward length. The dimensions above stated for the panes and shelves of the bedsteads for one person, vary according to the proportions.

The square measure of the straw-bed for two persons, ought to be at least 5 m. 75 c. so that being filled up with 25 or 30 kilogr. of straw, it may have the same dimensions both in length and breadth as the bedstead inwardly.

The square measure of the mattress for two persons, must be 5 m. 52 c. so that when furnished with wool and hair, it may have the same dimensions as the bedstead.

The mattress ought to be filled up with one half wool, and one half hair, or one third of the one and two thirds of the other, and weigh 14 kilogrammes 10 decagrammes.

The bolster must be 1 metre 29 centimetres in length, by 9 decimetres 7 centimetres in circumference, filled up with wool and hair like the mattress, and weigh 2 kilogrammes 90 decagrammes, altogether with the mattress, including the linen-cloth.

The quality of the blankets is the same as for a bed for one person; they are received in the same manner; the weight must be not less than  $3\frac{1}{2}$  kilogrammes, nor over 4 kilogrammes; they must be 2 metres 60 centimetres in length, by 2 metres 11 centimetres in breadth.

The sheets for the beds for two persons, must be 2 metres 9 decimetres in length, by 2 metres 11 to 16 centimetres in breadth.

When it is impossible to get blankets in sufficient quantity for the supply of hospitals, counterpanes made up for that purpose, may be used in their stead.

During the winter, the use of counterpanes should be combined with that of blankets, so that a blanket is always used jointly with a counterpane.

Shirts must be, in the back part from the neck, 3 feet 2 inches in length; in the fore-part, also from the neck, 2 feet 10 inches in length.

Each part must be of the same breadth, which cannot be less than 78 or 89 centimetres. The opening of each side must be 14 inches high, measured on the fore-part.

The sleeves must be 20 inches in length, not including the gusset, by 8 or 9 inches in breadth, without *amadis* (wrist-band,); the neck of the shirt must be 2½ inches high, by 14 inches in length.

Of the totality of the shirts, the 25th part must be quite open in the fore-part and sleeves, with the necessary number of strings to tie them; they are intended for the wounded.

The night-caps must be knitted, 10 inches high, and 12 inches wide.

The *cauls*\* of night-caps must be cut round on the top, and, when folded, they must be 16 inches high, by one foot in breadth.

The *capot* (cloak) made with common cloth or knitted stuff, must be 4 feet long, not including the collar, about 7 feet wide at the lower part, 4 feet at the middle; the collar 2 inches high, and 18 inches long.

There must be in the hospitals, for itchy and venereal patients, pantaloons of brown linen, to be changed every ten days.

The surgeons' aprons must be white linen; those

\* Linen caps or hoods, which go over the night-caps.

of the apothecaries, dyed linen; those of the overseers of the infirmary, unbleached linen; for every chief physician and surgeon, a frock of brown linen.

The dimensions of each apron must be 96 centimetres long, without including the bib, 119 millimetres broad, and of one breadth; the bib, measured by the middle, must be made with the same linen, and 30 centimetres high, by 60 centimetres in breadth, at the bottom. Every apron must be furnished with a pocket or bag, made with the same linen, 25 centimetres high, by 40 centimetres broad, and also with two tape strings.

The waistcoats and pantaloons of the overseers of the infirmary, must be, for summer, unbleached linen, strong and well woven; for winter, calmuck, or linssey-woolsey.

The waistcoats must have an uniform collar, that the overseers of the infirmary may be the more easily known.

Besides the effects before pointed out, the warehouses ought to be sufficiently provided with all the utensils necessary for the use of the patients.

## SECTION VIII.

### *Of the Ablution and Purification of the Hospital Bedding and Apparel.*

Though the operation of washing clothes is simple, and well known to the women who are employed in the laundries, yet a deal of mischief often arises in an hospital, from a neglect to attend to this necessary purification, as often as requisite. As the foul linen, &c. of an hospital is daily produced, the accumulation of it should be prevented, by having the laundries in con-



tinual operation. Foul clothes should be sent immediately from the wards, to a place where they may be aired before they are washed. They should be perfectly dried, and again aired, before they are returned into the clothes-room. It is not uncommon to neglect the washing of blankets, if not altogether, at least for a long time. This is an improper and a dangerous oversight. Whether they be made of wool or cotton, (such as are now furnished to the hospital department of our army,) they should be regularly washed and carefully dried. Bed-sacks, mattress-covers, and even sacking-bottoms, should also be washed occasionally; at least once or twice during the year. Foul bandages should not be kept one moment longer than necessary in the wards, after they are removed from ulcers, &c. They should be immediately sent to the laundry, and thrown into water to soak, previously to being washed.

The process of mangling should be used for all the larger articles, such as sheets, pillowcases, and the like. Besides being less laborious than ironing, it is peculiarly well adapted for the smoothing of sheets, imparting to them a glazed softness very agreeable to the skin of a sick person. Ironing of course must be employed for the smaller articles, as shirts, night-caps, &c.

The following are the regulations of the French military service, respecting the ablution of the effects of the hospital, and their rules for purification of articles supposed to be infected.

The articles of the hospital mentioned below, undergo a purifying process, every spring and fall.

The great-coats and blankets are to be frequently beaten, brushed, and fumigated; and every six months they are to be washed. The woollens are not to be put into the fuller, except when it is necessary for

their purification, which is principally after sickness deemed contagious.

The woollen-caps, jackets, and pantaloons, must be washed as often as they may require it, to be cleanly.

The mattresses and pillows are to be beaten twice in the year, or oftener, if deemed proper. The wrappers, or sacks, must be washed before they are again used.

When the straw of the straw-bed is broken or bruised, it must be renewed; and when the physician, in concert with the commissary of war, thinks it necessary, the bed-straw of a dead man must be renewed.

The sheets, the shirts, and the caps, must be renewed every five days. But the physician may order them more frequently changed, if he thinks proper.

The chief-overseer is to distribute to the overseers, the body and bed linen, destined for the sick, and is to see that the foul linen be punctually and correctly returned. He is accountable for them to the steward.

The foul linen is to be taken into the garrets and aired, till it can be washed.

The washing is generally done out of the hospital, and is contracted for by the piece or dozen, by the steward. In case no contract is made, the inspector examines the accounts.

When circumstances render it necessary to take in washerwomen and seamstresses to mend the linen, &c. they are to be paid by the day, at the common price, which is fixed by the inspector and the commissary of war; and they are to find themselves.

The steward must deliver out the clothes to be washed, as often as the renewal of them takes place. He is to have them returned clean into the hospital, as soon as possible afterward.

The clothes and linen of the venereal patients, and those affected with cutaneous diseases, are to be washed separately.

The shirts which the sick persons bring with them into the hospital, are to be washed, so that they may have them clean to put on when they leave it.

The clothes of men with contagious cutaneous diseases, are to be purified by fumigating them with sulphur.

The kettles, copper pans, and other utensils belonging to the hospital kitchen, and the apothecary-shop, must be cleaned every day; and when they require it, should be coated over again with tin in the inside.

The bathing-tubs must be washed and rinsed every day after they have been used by the patients.

The pitchers, porringers, and other utensils belonging to the wards, must be washed and rinsed, morning and evening.

Where a contagious disease has prevailed in the hospital for so long a time as to damage any of the effects used by the patients, they must be burnt or purified by airing them for a few days, or in any other proper manner.

The blankets should be put into the fuller; the sacks of the straw-beds and mattresses into a strong ley. The wool should be washed, carded, and dried in the sun. The feathers of pillows, &c. should be beaten, and if they have any bad smell, must be exposed to the heat of an oven of about forty or fifty degrees. The bedsteads must be taken to pieces, and well washed with a sponge soaked in a strong decoction of tobacco or lime, and not set up again until they are dried in the sun.

## SECTION IX.

*Of the Ventilation of Wards.*

As the health of the patients, the comfort of their attendants, and the uninterrupted ascent of the smoke in the chimnies of an hospital, depend so much on the proper mode of ventilating the wards and other apartments, this subject has claimed much of the attention of physicians and architects. Various are the plans that have been devised for maintaining a free circulation of fresh air through the rooms, so as to receive the benefit of such ventilation, without the inconvenience and even danger arising from the admission of cold or partial streams of air, to the patients and inhabitants. Ventilation may be effected by horizontal tubes carried along the ceilings of the several wards, galleries, lobbies, or other apartments communicating at different places with the open air. When the fire-places are not in use, the lower part may be shut up, and an opening made into the flue, near the ceiling, as a ventilator. It has also been the practice to remove a pane of glass from the upper sash of one or more windows, and fill up the space with a tin ventilator. This plan admits of the passage of fresh air, but I apprehend not in sufficient quantities for wards containing many sick people. Mr. Whitehurst proposed the use of an air-duct, three or four feet long, to be fixed in any corner of a room remote from the fire-place, and communicating with the external air through the wall. The diameter of this duct he recommends to be five or six inches. The air admitted through this aperture, will ascend perpendicularly to the ceiling, and be gradually diffused through the room, with the air of which it will mix, and soon acquire its temperature. The inhabi-

tants of the room are not sensible of any coldness while this process is going on, for it will not even disturb the flame of a candle. He mentions particularly, the necessity for perforating the wall for the air-duct, at a distance from the fire ; for if the current of fresh air be admitted in its vicinity, it will take the nearest course to the chimney, and of consequence, though this will act well, the circulation through the room will be partial. The air in the parts of the room remote from the air-duct, would then remain quiescent, and of course would not be so fit for respiration.

If there be two chimnies in the ward, and the doors and windows be air-tight, then such a duct becomes absolutely necessary ; and in such case the dimensions of the duct must be increased. The reason of this necessity is obvious ; for if a fire be made in *one* of the chimnies, this fire will burn well, and the ascent of the smoke will be rapid and complete, because this chimney takes in its draught the air which passes down the one out of use. But if it should now be necessary to make fire in the *other* also, the smoke will not ascend in this at all, since a current of air is constantly rushing down this chimney to supply the fire in the other. The same thing of course will happen reversely ; for if the fire be previously made in the second chimney, then the smoke will not rise in the first. If the plan of Mr. Whitehurst be adopted, I would propose that the air-duct be made to perforate the wall so as to form an angle with its perpendicular elevation, that is, in a direction from the outside of the wall towards the ceiling ; so that the air would be directed obliquely against it, and of course it would more effectually be prevented from inconveniencing the inhabitants, by making a current through the room. Or, what would perhaps be still better, let the current that passes through this air-



duct, be broken by an elbow in the duct, (as in a stove-pipe,) the arm of which should be pointed directly upward towards the ceiling. If this be done, the air will strike perpendicularly against the ceiling, which cannot happen in Mr. Whitehurst's plan. Another plan recommended by Mr. Whitehurst, and one which he says stood the test of experiment in many instances, is as follows: He left an open space between the upper part of the architrave surrounding the door, and the wall, on each side of the door, and an open space also between the casing and the lintel. In this construction of the door-cases, the air descends between the architrave and the wall on the outside of the door, and ascends between the architrave and the wall on the inside of the room. The current of air thus admitted from without, is forced up against the ceiling, and is dissipated through the room, without being felt by its inhabitants, as it gradually acquires, before it reaches them, the temperature of the surrounding air. Mr. Whitehurst says that this mode of ventilation afforded a free exit for the smoke of candles; prevented the air of the room from becoming stagnant; rendered small apartments as pleasant and healthful as larger ones; and effectually prevented the smoke from descending the chimney of such small rooms, when the doors were shut. This able architect proposes, when it is not convenient to make an opening in the wall for the introduction of an air-duct, this mode of ventilation, *viz.* by "admitting air between the folding of the sash-frame, by means of cutting away about an eighth of an inch from the frame, leaving the whole substance at each stile. This is only practicable," he continues, "when there are shutters on the outside, and not on the inside of the window. For by inside shutters the current of air upwards is obstructed; whence it rushes through

the crevices in various directions, and produces unpleasant effects." Mr. Willan mentions that the wards of St. Thomas's Hospital, in London, were all formerly ventilated in a mode analogous to this, by Mr. Whitehurst, *viz.* in this manner: "In every second window, about an inch and an half of each frame, in the bottom of the upper sash, is cut away. A pane of glass nearly two feet in width, is set across the window, resting upon the top of the upper sash, and fastened to it by hinges. The frame can be moved on the hinges, so as to make a greater or less angle with the window; and by that means admit more or less air at pleasure. The air which enters between the sashes, being directed by the pane towards the ceiling, is diffused through the ward without any perceptible current." When I visited St. Thomas's Hospital, in the beginning of 1811, there were but two wards ventilated in this manner, and those up stairs. The general ventilation of the wards was kept up by the tin ventilators in the window-sashes.

Monro recommended a permanent plan for ventilating the wards of hospitals. He proposed that a hole should be cut in the ceiling of the ward, and communicating with the chimney of the upper ward, above the fire place, by means of a wooden tube, having its opening into the lower ward, furnished with a plug which can be removed at pleasure. The principle of ventilation in this plan is, that the foul air is lighter than the pure, consequently will rise to the upper part of the ceiling, and find its exit through the tube into the chimney above. This arrangement I have seen in St. George's Hospital in London. Some of the wards of that institution are furnished with these ventilators, and they are found to answer the purpose very well. I think it would be a good plan to have a small

Venetian blind in the upper part of every door of a ward communicating with entries or galleries, through which there is a continual circulation of fresh air. This opening might be furnished with a shutter, by which it could be closed at pleasure.

Some of the wards of the Pennsylvania Hospital are ventilated by means of an opening into the flue of the chimnies, near the ceiling, about four inches square. The west end of the building, which consists principally of cells for lunaticks, is remarkably well ventilated. An opening is made from the upper part of each cell in the north and south walls, which communicates with the chimney flue, and a free circulation of fresh air is kept up through the different stories, by means of two or three lattice-openings between the floor of one entry and the ceiling of the one below. This mode of ventilation is preserved in each story of the west building. It is principally owing to this structure, that the air of that portion of the hospital is constantly so pure, notwithstanding the many squalid and offensive tricks practised by the fatuous maniacs in their cells, and which, without this admirable ventilation, would stifle every one who came within the sphere of its influence. There is but one objection that has been urged to this contrivance, and that is the ready communication of sound which it affords, from one story to another. This, however, is an objection of trivial import, compared to the indispensable advantage of a free circulation of fresh air in the apartments so continually liable to be offensive, from the habitation of the miserable beings who dwell in them. Upon the whole, I think that mode of ventilation might be adopted in other than maniacal apartments, with advantage. In hospitals not intended for the reception of lunaticks, the inconvenience of affording a ready passage for

noise and vociferation from one story to another, would not be felt. Such lattice ventilations therefore, I would recommend for the lobbies or entries of the naval hospitals.

Different fumigations have been recommended by the writers on this subject, for purifying the wards of hospitals. They are so various and so diverse, that I shall not attempt even the enumeration of them, much less commence a discussion of their respective merits. I leave the choice of them to the discretion and judgment of the physician and surgeon who may be attached to the hospitals, whose province it is to attend to such minutiae. The plan however most to be depended on is, I think, that which prevents the introduction of foul and infected articles into the wards, and great care and attention in keeping them clean and well aired.

## SECTION X.

### *Of the method of warming Hospitals.*

As there is no part of the internal economy of hospitals more important, so there is none which admits of more diversity of opinions respecting the best and most healthful mode of accomplishing its object, than the heating of wards during cold weather. While many contend that the use of stoves is pernicious, others declare that a large ward with high ceilings, cannot be heated to such an agreeable and constant temperature as the patients require, by means of open fire-places. I shall not pretend to enter into the merits of either of these modes. In fact, I believe them both capable, with proper regulations and precautions, of answering the same good purpose. If the economy of fuel be consulted, stoves are undoubtedly the best means of heat-



ing the rooms and galleries, or entries ; and if a proper ventilation is attended to, the injury resulting from the close and intense heat arising from hot iron, is prevented. If the common ten-plate stoves be employed, they should be furnished with sand-baths. This contrivance prevents the use of the top of the stove for improper purposes, such as the putting of candlesticks, provisions, and other greasy articles upon it. The smell and vapour arising from the melting of such things upon the stove, is exceedingly unpleasant, oppressive, and unhealthful ; and I believe is more generally the cause of the injury resulting from the use of close-stoves, than the warm air produced by heated iron.

Count Rumford remarks, that “ there is frequently an oppressiveness in the air of a room heated by a German stove, of which those who are not much accustomed to living in those rooms seldom fail to complain, and indeed with much reason ; but this oppressiveness does not arise from the air of the room being injured by the respiration and perspiration of those who inhabit it ; it arises from a very different cause,—from a fault in the construction of German stoves in general ; but which may be easily and most completely remedied, as I shall show more fully in another place. In the meantime, I would just observe here, with regard to these stoves, that as they are often made of iron, and as this metal is a very good conductor of heat, some part of the stove in contact with the air of the room becomes so hot as to calcine, or rather to *roast*, the dust which lights upon it ; which never can fail to produce a very disagreeable effect upon the air of the room. And even when the stove is constructed of pantiles, or pottery-ware, if any part of it in contact with the air of the room is suffered to become very hot, which seldom fails to be the case in German stoves constructed on the



common principles, nearly the same effects will be found to be produced on the air as when the stove is made of iron, as I have very frequently had occasion to observe."

Where the expense of them can be met, the large Russian or soap-stone stoves, might perhaps be more useful than those of iron. There is one advantage that stoves possess over open fire-places, and that is, that they prevent the sudden chilliness of the room, when the fire is suffered to go out in them, that succeeds the dying of a fire in the chimney-place. The temperature of the room is very gradually and imperceptibly diminished in the one case, while its reduction is sensibly and disagreeably sudden in the other. This inconvenience on the other hand, of the open fire-places, may be easily obviated, by keeping up a constant fire during the day and night. But here the consumption of fuel is a consideration of no little importance.

Mr. Robert Reid, an eminent architect of Edinburgh, has proposed the warming of hospitals in the following manner: "A certain degree of heat," he says, "should be communicated throughout the building, by means of flues running along the floors of the galleries. It has occurred to me," he continues, "that this can be most effectually done, by constructing a flue to traverse the floors of the galleries, having a small tin pipe laid along the inside of it, and the pipe attached to the boiler in the under part of the building. The hot steam in this pipe would soon warm the air in the flue, which would be easily admitted into the galleries, by means of registers, placed in different situations. This mode of warming the building, and having at the same time ventilators for fresh air in the ceilings, would keep up an almost constant change of air, and would

not be liable to the objections of heated air coming from flues through which the smoke passes. The smoke in this way, would be carried off, in a separate upright flue, immediately from the fire-place, under the boiler, and cleared out, without any interference with the flue in which the steam-pipe would be placed. A very small quantity only of fuel would be requisite, as the pipe, when once filled with steam, would retain its heat for a considerable length of time after the fire below the boiler had been extinguished."

This is unquestionably a very ingenious plan, and consistent with the strictest economy. It is certainly worth a trial in some portion of one of the navy hospitals that may be erected.

On this subject, however, it is necessary to say but little. It is more particularly the province of the architect who furnishes the plans for the buildings, to devise such arrangements, as shall in his estimation seem best calculated to economize expense and promote comfort. It is not to be forgotten also, that the situation of an hospital, as respects its exposure to the sun; and its site, whether in the northern or southern states—must considerably influence and modify the various methods that have been, or may be employed, for heating their apartments to an agreeable and unvarying temperature. Upon the whole, however, I cannot but think, that the method of warming hospitals by stoves, is to be preferred. Of all their various structures, I think that one which is eminently entitled to our preference, is the Pettibone-stove, improved by Moore and Herkness, now getting into general use in this city. Whether we take into view the inconsiderable consumption of fuel, the bland and vernal-like heat it produces, its safety, or its beauty, it is equally deserving our attention. The principle upon which

this Chimney-place-stove is constructed, is this: the cold air from the cellar, or the outside of the wall, is introduced into an air-chamber, at the back part of the chimney, and passes into the room, through a number of sheet-iron pipes or tubes, so constructed, that they become hot enough, by the action of the fire below, to heat this cold air previously to its escaping from them.

The precise manner of constructing this stove is as follows:

When it is to be formed in a common fire-place, the chimney-piece is first to be taken down, and the elevation of the arch or front enlarged, so as to make its key, in perpendicular height from the hearth, about four feet six inches. The back and covings of the chimney-place are now broken away; the first to the main or partition wall, and the latter as extensively on the left side as possible, and just far enough on the right side, to leave room for a narrow flue of about nine inches, to communicate with the main flue of the chimney, through which the smoke passes from the fire. This is on a supposition that the chimney flue is on the right side; the arrangement must be reversed, when the flue is on the left.

A perforation is now made through the basement arch, into the cellar, of about 4 inches square, and at a distance of three or four inches from the main wall. This aperture is left open. A wall of brick is now to be raised from the back part of the hearth, up to the throat of the chimney, at such distance from the main wall, as to leave the opening into the cellar between it and the main wall, and to form an air-chamber of about nine inches in depth, of the height of the brick wall, and the breadth between the enlarged covings. The throat of the chimney is next to be arched over, leaving only the narrow flue on the right, be-

fore spoken of. The front is now filled up by fitting perpendicularly in, a soap-stone-slab, of about three inches in thickness, and as wide and deep as the opening may require. In this slab are six or eight perforations, about three inches in diameter, and corresponding openings through the brick wall into the air-chamber behind. The communication between this chamber and the room is now completed, by means of six sheet-iron pipes, which pass from the brick wall to the soap-stone front, opposite to, or rather over, the corresponding openings of each. About twenty inches from the hearth another soap-stone slab is laid horizontally, close from the right side, and with an opening of about six inches on the left, for the passage out of the smoke from the furnace chamber formed below. Four or five subdivisions are made with brick, in the chamber enclosed between the upper arch, the lower soap-stone slab, and the covings of the fire-place. These walls are formed transversely, and the intention of them is to break the free and quick passage of the heat and smoke of the fire up the chimney. It now traverses up one opening and down another, until it passes over four or five, heating the iron pipes (and of consequence the cold air passing through them) in its passage over them, until it reaches the small flue on the right side of the chimney, which communicates with the main flue. At a few inches distance from the main flue, the small canal is furnished with a damper, which, by means of a handle perforating the wall above the chimneypiece, can be made to close up the passage altogether, or leave it open at pleasure. The use of this damper is to confine the heat contained in the different chambers of the stove, after the wood has been reduced to a coal, when of course no smoke arises from it which requires a passage up the chimney. Then by



closing the door of the furnace-chamber, which is small, and at the lower part of the front slab, on the hearth, the heat is confined effectually for many hours, and the air continues to pass out of the pipes into the chamber, very hot.

When it is judged expedient to bring the air from the outside of the wall, instead of the cellar, it is only requisite to perforate the wall externally, so that a current of cold air may gain free access to the air-chamber.

An improvement has been made in this contrivance by Dr. Caldwell, by which all the heat produced in the stove, is effectually saved; and in-so-far as it assists in the grand object of economy in fuel, it is deserving attention. It is evident, that from the heat striking against the upper part of the stove, it must become very hot; the Dr. suggested, that three or more additional perforations should be made through the marble or stone chimneypiece, above this arch. The air of the chamber, which passes into these apertures, will of course come out considerably heated. This improvement is now incorporated with the original structure.

This gentleman has also proposed the partial covering of the aperture into the cellar, with an iron plate, so laid, that it may form the hearth or bottom of the furnace-chamber. By this contrivance, the air, in its first passage from the cellar to the air-chamber, strikes against the plate, which of consequence is heated by the fire of the furnace, and thus it becomes warm, even before it passes into the iron pipes. I have no doubt that this contrivance will be found to answer a very good purpose.

The principal advantages of this stove are four: first, the consumption of fuel is lessened by three-fourths: secondly, as the soap-stone parts with its heat



slowly, the air of the room becomes gradually heated to an equable and unvarying temperature, and this too in all parts of it, those remote from the stove, as well as those in the immediate vicinity of it: thirdly, it effectually prevents accidents from fire: and, fourthly, it is not necessary to replenish the fuel but twice during the day.

These considerations sufficiently entitle this stove to the attention of those who are employed to erect hospitals of any description. Where the chimney-places are constructed purposely for them, the expense and trouble will be considerably lessened.

As it is not very easy to get a clear idea of the internal structure of this stove, I have annexed a plate of its ground-plan and elevation. It must be observed, that the measurements here given, vary, necessarily, with the different dimensions of the chimnies in which they are to be constructed. As I have said that this stove was the Pettibone-stove, improved by Moore and Herkness,\* it may not be improper to mention in what this improvement consists. The rarefying-air-stove, constructed by Mr. Pettibone, upon Dr. Franklin's principle, was modified in a variety of different structures; but they were all separate from the fire-place. Moore and Herkness improved the plans of Mr. Pettibone, by constructing his stove *within the area of the fire-place*. This is an improvement of no little importance. It prevents the necessity of removing the stoves in the summer season, to enjoy all the space in the room we can; and is, besides, when properly constructed in a marble chimneypiece, quite ornamental. It occupies no part of the room, and of consequence does not contract the size of the apart-

\* Stone-cutters, next door to St James' church.

ment in which it may be erected. As this stove is without a name, I have called it the American Chimney-place-stove.

#### EXPLANATION OF THE PLATE.

(A view of the stove and chimney-piece, when completed.)

#### *Fig. 1.*

**A B C D.** The marble front of the chimneypiece.

#### *Fig. 2.*

**C E and D F.** The upright marble pillars.

*a b c d.* The open space of the fire-place filled up by the soap-stone slab.

*e f g h i k l m n o p q.* Twelve circular holes, three inches in diameter, in the soap-stone-front, and which communicate with the air-chamber in the back of the chimney, by the iron pipes.

**G.** An iron or soap-stone door, 12 inches square, opening the furnace-chamber.

*r.* A small circular door in the larger one.

*s t.* The arch or slab covering the throat of the chimney, and forming the top of the stove, having a small opening on the right, communicating with the flue of the chimney.

*u v.* A wall of brick, raised perpendicular to the hearth, at right-angles with the front slab, and to within four inches of the top of the stove. At the bottom of this wall an opening is made into the furnace-chamber, to convey the soot into it. This is stopped up with a brick and mortar, and only removed when the chimney is to be swept.

*w x x.* A soap-stone-slab carried to the back wall, and extending parallel with the line of the hearth, to within four inches of the left coving of the chimney; or it may be carried entirely across, if a hole be left in

Fig. 1.

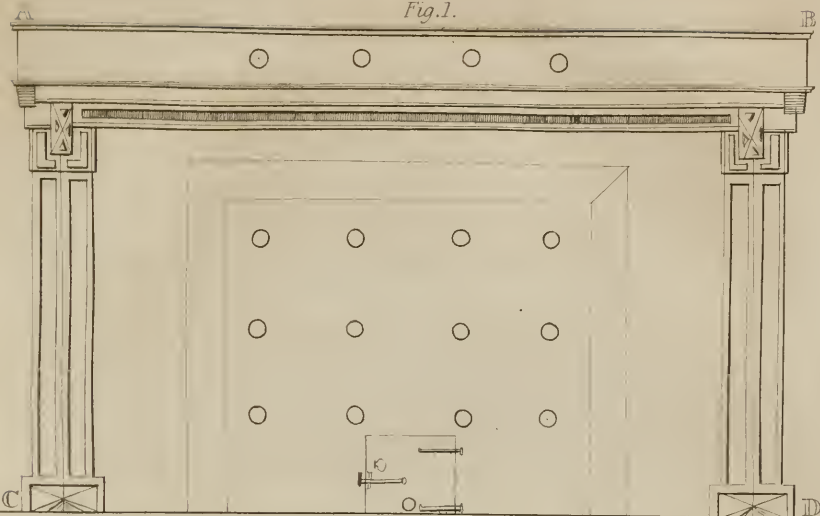


Fig. 2.

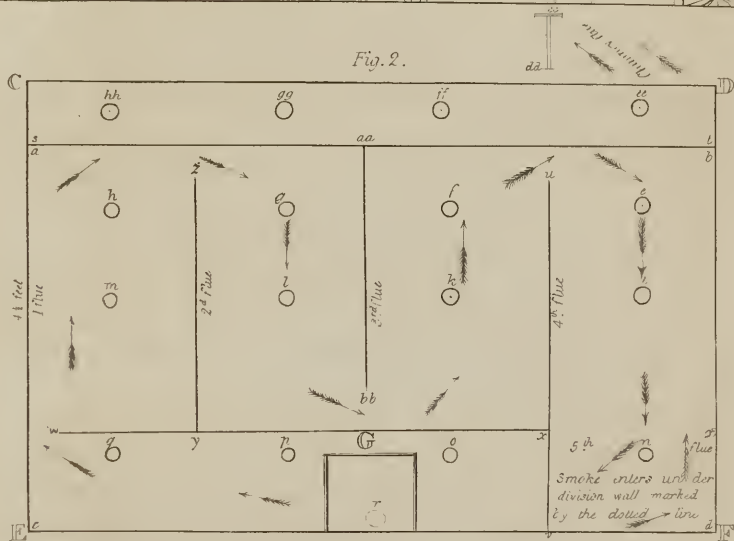
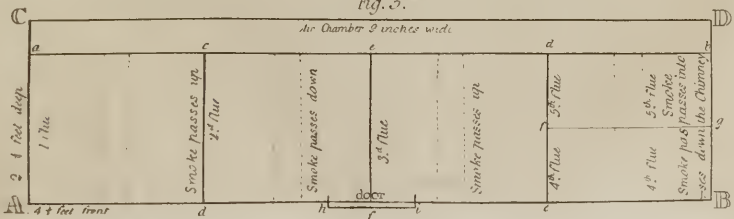


Fig. 3.





it four inches square, for the passage of the smoke into the first flue.

*y z.* A vertical wall of brick, with an opening at the top, for the passage of the smoke into the second flue.

*aa bb.* Another vertical wall of brick, with an opening at the bottom for the passage of the smoke into the third flue.

*cc dd.* The damper.

*ee ff gg hh.* Four holes, 3 inches in diameter, made in the marble front of the chimneypiece, above the stove, according to the improvement of Dr. Caldwell.

*Fig. 3.*

**A B.** The line of the hearth.

**C D.** The main or partition-wall of the house.

**A C.** The left coving of the chimney.

**B D.** The right ditto.

*a b.* The wall enclosing the air-chamber.

*c d.* First vertical wall.

*e f.* Second ditto.

*d e.* Third ditto.

*f g.* Division wall.

*h i.* The door into the furnace-chamber.

The dotted lines represent the situation of the iron-pipes.

The arrows show the course taken by the smoke over the different pipes that cross the flues of the stove, until it arrives in the chimney.

The air-chamber may be carried round the sides of the stove, as well as at the back, by a double wall.

The mouths of the air-tubes may be furnished with circular tin doors, cut to fit close, and turning on a pivot, so that they may be closed when the stove is not in use, and thus prevent the cold air from rushing into the apartment from the cellar, or without.



The cost of altering the fire-places and erecting these stoves, in this city, is about 50 dollars. Twenty dollars would doubtless be saved, if the chimnies were constructed for them. There are many of them now in use in this city; and they are found to answer so well, and to be so superior to every other mode of heating rooms heretofore employed, that they are becoming daily more and more in use.

## SECTION XI.

### *Of the Diet.*

The diet of an hospital is an object of primary importance, as not only the health, and sometimes even the lives, of the patients depend on its being in a proper quantity, and of a wholesome kind, but likewise because provisions and liquors are articles of considerable expense. If a proper system be not observed in the arrangements connected with this subject, in the establishment of an extensive hospital, the patients will suffer from their food being too slender or superabundant; and the steward's returns will exhibit an expense the very opposite of that degree of economy which ought to characterize his expenditures for provisions, in a well organized institution. Diet has been an object of much attention on this account, to the conductors of foreign hospitals, whose extent, indeed, rendered this subject a consideration of immense importance. Experience has proved to them, that an attempt to accommodate every individual patient with a diet suited to his peculiar case, was not only incompatible with the promptness and system necessary in the steward's department, and the arrangements of the kitchen, but that in an hospital containing a great number of patients, it became next to impracticable.

Moreover, such a plan is fraught with numberless inconveniences, as well as unnecessary expense ; and besides rendering the business of the steward and the cook needlessly complex, is, after all, of no material advantage to the patients. The practice of establishing diet bills, has been objected to by some writers on this subject, on the score of the supposed injury resulting to the patient, by furnishing him with a diet that may not suit his particular condition ; but I really think, without any very good grounds. The physician or surgeon always has it in his power to order in his prescription-bill, noticed in another place, such other articles besides the particular diet he may specify, as he deems necessary for the health or cure of his patient. These articles come under the denomination of comforts, and do not at all interfere, when ordered, with the general diet of the house, to which they are only additions.

In the French service, the ration for a sick seaman is established by a decree of the emperor ; and it is served out on board ship, in lieu of their common ration, by the *distributeurs de rations* ; and in their naval hospitals, as in the English establishments, by the steward. This is a judicious plan, I think, for the sea-service, since it is an economical one. The moment a sailor is taken on the surgeon's list, his common ration, which in our service is at present issued daily, however incapable the man may be to consume it, or any part of it, is stopped, and the sick-ration is issued in lieu of it. The same thing takes place, when a man is sent to an hospital from a vessel ; his ration on board the ship is stopped during his absence, and the sick-ration is served out for his support in the hospital, by the steward.

The ration for a sick seaman in the French service, to which I have alluded, is as follows :

Kind of Provision.	Quantity.
White bread, - - -	20 ounces.
Egg, - - -	1
Mutton, - - -	8 ounces.
Chicken, - - -	$\frac{1}{2}$ part.
Mutton instead of chicken,	4 ounces.
Prunes, - - -	4 do.
Rice, - - -	2 do.
Butter or sugar, - - -	$\frac{1}{2}$ do.

This is the ration allowed to all sick men on board ships, and in hospitals ; but the physician or surgeon of the hospital, or the surgeon of the ship, has the power to order the substitution of any article he wishes to prescribe, in the place of any one of the established articles ; they can likewise order any comfort in addition to it, which they deem necessary. The French surgeons highly commend this plan; and they informed me it was productive of every end intended to be accomplished by its establishment.

The plan of victualling pursued in the Pennsylvania hospital, when I resided in that institution, was an exceedingly simple and good one. There were three different diets prepared in the house.—1. The full or generous diet. 2. The common diet of the house. 3. The low diet. Besides these, there was a soup made every day, in such quantity as necessary, according to the following receipt, called the *vegetable soup* :

Potatoes paired and cut into small

pieces, - - - - -	3 parts,
Onions cut in pieces, - - -	1 part,
Crusts of bread, - - -	1 part,

Boiled in water to one half, strained through a sieve or colander, and seasoned with salt.

This plan gave but little trouble to the steward or

the cook, and was sufficiently comfortable for the sick. The physician or surgeon ordered one of these diets for his patient, and when he deemed the soup of the common diet (should he order this) too gross for his condition, he substituted the vegetable soup. Under the first diet was comprised oysters, eggs, porter, wine, &c. &c. A plan similar to this is pursued in the diet arrangements of St. Thomas', St. Bartholomew's, Guy's, and St. George's hospitals, in London.

Diet-bills are used in the royal naval hospitals at Haslar, Portsmouth, Deal, &c. in England; and in the royal military hospital at Stonehouse, near the town of Plymouth-dock, I saw them pasted up in the apartment of every nurse. The medical officers of these hospitals informed me that they considered them, from experience, the most perfect system of victualling their publick establishments for sick seamen and soldiers. They are of opinion that they are productive of the greatest degree of economy possible, and that their larger hospitals could not be well conducted in the steward's department without them.

The following *Scheme of Diet* I would recommend for adoption in the U. S. Marine Hospitals. It unites in an eminent manner, economy with convenience, dispatch, method, and comfort to the sick. Economy in diet is a desideratum of great importance, and on this account, such a scheme as this ought not to be overlooked in the establishment of large marine hospitals in the United States. Promptness and system in the steward's department is also an object of great consequence; and the comfort of the sick a primary consideration. These are sufficient reasons, and I apprehend of no little weight, to induce the adoption of this establishment of diet.

## SCHEME OF DIET

FOR THE U. S. MARINE HOSPITALS.

*Full Diet.*

A pint of tea in the morning for breakfast, and a like quantity in the evening; sixteen ounces of bread; sixteen ounces of beef or mutton; one pint of broth; sixteen ounces of greens, or good sound potatoes, and two quarts of small beer.

*Half Diet.*

Tea morning and evening as above; sixteen ounces of bread; eight ounces of beef or mutton; eight ounces of greens or good sound potatoes; one pint of broth; and three pints of small beer.

*Low Diet.*

Tea morning and evening as above; eight ounces of bread; two ounces of butter, or in lieu of butter, one pint of milk; half a pint of broth, or such an additional quantity thereof as the physician or the surgeon shall judge proper.

*Casualty Diet for men received.*

The physicians and surgeons are to prescribe half-diet, or low-diet, for such patients, according to the state of their health when they are received; and the proportions of each species of provisions to be issued by the steward, is the same as to the other patients on half and low-diet.



*Casualty Diet for men discharged.*

A pint of tea in the morning; one pound of bread; six ounces of cheese, and one quart of beer.

One drachm and an half of good souchong tea, seven drachms of good muscovado sugar, and one-sixth part of a pint of genuine milk, to be allowed to every pint of tea.

The broth should be made by boiling together the meat allowed in the half and full-diet, with the addition of twelve drachms of good sound barley, twelve drachms of good onions, or one ounce of leeks, and three drachms of parsley, for every pound of meat.

It will be found, on trial, that the meat intended for the patients on full and half-diet, will make a sufficient quantity of good broth, so as to yield a full pint to them, and an half pint to those on low-diet.

The steward will issue half an ounce of salt daily for each patient in the hospital, and one ounce of vinegar to each patient on full and half-diet.

By means of this diet bill, the steward's business is extremely simplified, and rendered easy of performance even when the number of patients is very great.

He attends with his clerk and servants, at the larder or *provision-room*, which is an apartment appropriated for the reception of beef, fowls, bread, greens, &c. &c. in the morning after the physician and surgeon have gone their rounds. The ward-master delivers the provisions when apportioned out, to the nurses and attendants who repair to receive them, at stated hours. The steward, who is furnished with the prescription-bills of the day, makes his calculation of the aggregate quantity of each article requisite to be served out, and when furnished, he notes it down in his day-book.

As good bread is a standing article of these different diets, there should be a bakery attached to the hospital, and a good baker employed to attend it. A sufficient quantity of bread to furnish all the officers, patients, labourers, &c. belonging to the hospital, should be baked every other morning. This will be an economical arrangement, as the agent will be enabled by purchasing large quantities of flour at a time from the mill, or from store-houses, to procure it at a cheap rate.

There is a brewery attached to some of the English naval hospitals of which I have spoken, and all the beer consumed in them is made by the brewer who conducts its operation. This too is attended with a saving of that profit, which the brewer has upon all the beer he brews, over and above the cost of the materials, and the price of labour expended, in converting them into liquor.

I do not contend for the necessity or expediency of imitating this plan, in our hospitals, unless, like the British hospitals, they be established upon a very large scale. But the bakery is absolutely indispensable in an hospital of any extent, where economy and convenience are considered as desiderata.

Other drinks, such as rice-water, barley-water, treacle, or water combined with a small portion of molasses, and other things of the like nature, may be substituted in the place of beer, when this is deemed improper for particular patients.

The regulations in the French military hospitals, with regard to diet, are the most minute possible. They may suggest many hints for the diet arrangements of our hospitals; with this view I shall detail them fully. They are as follow :

The portion of aliment for each patient per day, is, an half kilogramme of meat, (two thirds in beef, and

one third in veal or mutton,) seven hectogrammes and an half of bread, which must be between the mixed and white, of pure wheat, and well baked. Half litre of wine, of a good quality, and as old as possible ; besides salt and vinegar.

The daily aliment and drink for the sick, are prescribed by the physicians in the morning visits.

When a patient is to have a full ration, no other kind of aliment is to be used than those specified ; and the prescription of the customary aliments is always to be by the full, three quarters, half, and a quarter ration, so that the bread for the soup may be taken in the ration prescribed.

Each loaf of bread procured for the hospital, must weigh, when cold, two full rations, to facilitate, without the trouble of weighing, the separation in three quarters, halves, quarters, and half-quarters, for the soup. It is to be weighed in the presence of the inspector and sergeant of the platoon, previously to its being put away into the pantry ; and if it should be too much done, or burnt, or not of sufficient weight, it must be sent away, or returned to the provider.

The subaltern officer on duty, is to assist at the distribution of the rations.

The meat must be fine, of the first quality, well bled, and neither the head, pluck, tongue, feet, nor blood, are permitted to be received. The whole quantity supplied must consist of two thirds of beef, and the other third of veal or mutton.

The weight of meat for each patient, attendant, or servant, is to be at the rate of two hundred and fifty grammes.

The distribution for the morning must take place at seven o'clock the preceding evening, and that for the

evening, between the hours of nine and ten in the morning of the same day.

Besides the agent, one or more subalterns of the platoon are to attend the morning and evening's general weighing; and the steward is to send them the list of the number of sick and attendants that are to draw rations. The inspector is also to assist at the general weighing.

The contractor is to take back and replace the meat which has been rejected.

As soon as the general weighing is finished, the meat is to be put into the larders, and the key intrusted to the sergeant of the guard, who at the customary hours must be present at the opening of the door. The meat is then taken out, and placed in the kettle, in his presence.

A sentry is to be stationed in the kitchen, with orders not to let any meat be taken from it, before the distribution.

As the hour of serving approaches, all the meat is taken out of the boiler, and cut into rations, in the presence of the subaltern officer on duty.

For each half kilogramme of meat that is put in the kettle, one litre and nine decilitres (two pints) of water should be added, and then boiled down to one litre, four decilitres (one and an half pints.) To this is to be added the requisite quantity of salt, and a sufficient proportion of vegetables, of such kind as the season affords.

When the physician thinks proper to change this meat and broth, for some such broth of vegetables as he orders, this last is to be given in lieu of the other; but he should give in a list of those that are to have the substituted broth to the steward, the day before, that their ration of meat may be stopped.

The surgeon on duty, is obliged to see that the patients on low-diet receive their broth at the hour established by the visiting physician.

The wine used in the military hospitals for the general drink of the patients, must be either red or white, old, of good taste and flavour, and well clarified. New wines cannot be admitted, unless for the use of the overseers or servants. But if none can be procured except of the last vintage, it must not be put in use, till after the first of March.

The wine employed as the daily drink, cannot be afforded in any other quantity, than the proportion ordered in the *nourishing aliment*.

It is particularly prohibited to distribute more wine than specified in the ration.

In countries which do not produce wine, nine decilitres (one pint) of good cider must be substituted, for the patients ; and one litre, eighty centilitres of beer, for the overseers.

When the physicians think that the use of it would not be pernicious ; the beer may be given instead of wine, to those patients afflicted with the itch or venereal disease, in countries where the cider is scarce. The benefit of the sick requires the greatest caution in the use of wine ; the physicians should therefore be very careful, to prevent any abuses on this point.

The brandy used in the hospitals, must be made from wine, and of nineteen degrees in strength.

The vinegar must also be made of wine. The commissary of war, is to make frequent surveys of the cellars, ware-houses, and magazines of the hospital, to acquaint himself with the qualities of the liquors they may contain. The physician general may attend him ; and if any defective or spoiled wine be found, he is to have it immediately replaced. It is understood, that



he is to pursue the same plan, as respects the beer and cider.

The uncommon aliments known in the hospitals by the name of light aliments, are: eggs in the shell, prunes, milk, thickened-milk, rice-milk, and rice. They may be ordered in addition to the customary diets, but only one of them can be given at a time to patients under full, half, or under-ration. The panado and fat-rice are given them instead of soup, and it is to be understood, that their share of broth is to be used in it. Those under the vegetable diet, may be ordered any sort of light aliments.

In the panado, there must be an half hectogramme of bread; in the thickened-milk, three decagrammes of flour. The quantity of rice in fat broth or milk, is an half hectogramme (one ounce and an half;) the quantity of milk, is one quarter of a litre; the same quantity of milk is to be put into thickened-milk or rice-milk; and lastly, six decagrammes of prunes weighed before the dressing.

The physician may pursue the same plan in dividing these last mentioned aliments; as is customary with respect to the ordinary aliments, that is, in three-quarters, half, and quarter rations.

The rice must be of a good quality, well winnowed, and not small.

Refined lamp-oil, sweet-oil, prunes, sugar, and generally all other kinds of provisions, must be of a good quality, sound and vendible. The provisions must be delivered in each hospital, at the expense of the contractor. They are all received by the commissary of war, in the presence of the inspector and physician-general, except the bread and wine. All such as are rejected, are placed to the account of the contractor.

who is not indemnified for them, but is obliged to replace them, with such as can be received.

In countries where the liquors are bought, it is understood that the contractor will deliver them with their casks and vessels, which must be returned to him as soon as emptied.

The distribution of provisions is to take place at ten o'clock in the morning, and four in the afternoon; but the commissary of war, with the concurrence of the physician-general, may change the time.

The bread and broth are first distributed, while preparations are at the same time making for serving out the meat and other aliments, together with the wine, which are to be distributed immediately afterward. The serving must be executed with carefulness, neatness and dispatch, and it is to take place every day for the succeeding day, so as to preserve order in the wards.

The portions after having been calculated in the presence of the surgeon on duty, and the sergeant of the platoon, are carried by the servants and attendants to the respective wards they attend, and distributed to the patients.

The commanding officer of the place, in which the hospital is established, is required to visit it every day. One or more officers of the garrison are to attend every morning and evening, at the distribution. They are to give their opinion on the broth, wines and other aliments, in presence of the steward and an attendant; and they are to inscribe and sign, on a register furnished by the commissary of war, their observations on the different provisions, &c. that they may be changed if necessary. The subaltern officer is to see the distribution made to the patients in the different wards, and to keep good order.

The commissary of war is charged to attend as frequently as possible, the preparation of provisions, and the distribution itself; and to taste himself the broth and different aliments. The physicians are to pass their judgement on them daily, and if they find any defect, to make known the same to the commissary of war. The resident surgeon who attended the physician in his morning visit, must go round the different wards, after the distribution, with the sick-list in his hand, to see whether every patient has received what was ordered for him; taking care to diminish or stop the aliments for any one, who may have become worse since the morning's visit, and unable to consume the diet ordered, without injury.

The inspector and commissary of war, are enjoined to be careful in having a daily register of the consumption of provision kept. This register must be exhibited to support, 1st, The invoices and receipts made by the commissary of war, in the presence of the inspector and steward, and as receipts for other articles besides bread and meat. 2ndly, For the amount of the expenses of the sick at each visit, and order of the physician-general of the hospital, and the amount of the pay of the under-attendants of all grades. The register must also shew the names of all the patients and attendants, distinguishing those that were victualled from those that were not.

The statement of the consumption of provisions, and the vouchers for the same, duly certified by the steward and inspector, are sent to the commissarys' office the beginning of every month. The commissary then sends them to the contractor.

The sick-list given to the steward, must mention the amount of aliments that are to be distributed.

These sick-lists are transmitted to the inspector at

the end of every month, who is to examine them with the expenditure returns of provisions; and in case any difference should be found between the consumption, and the number of sick, the difference is charged to the person who is accountable.

All returns for consumption are to be rejected, that do not accord with the regulations, unless they be authorized by the commissary's orders, by the advice of the inspectors and physician-general.

The provisions, liquors, and other articles of diet, remaining in the hospital at the annual survey, are to be estimated at the same price, as when purchased by the steward, or the contractors.

The overseers of the first and second class, are to have the same ration as the sick. These and all other persons whose rations are included in the general weighing, are not to be served, until the rations are issued to the sick; and if there should not be provision enough of the established proportion, eggs or other articles are to be substituted.

The overseers are prohibited from taking any part of their rations out of the hospital. The particular cases that are to make an exception to this rule, are to be laid before the directing minister. The janitor of course is to stop any provisions going out. He is forbid to permit any provisions or liquors to be taken into the hospital, except those ordered by the steward for the use of the hospital, or those for the particular use of the physicians or overseers. The door-keeper of military hospitals, is positively forbid to vend any kind of provisions or liquors, under the penalty of a removal from his office; and the punishment must be more severe, if the trespass has given rise to any excesses. Independently of their salary, the door-keepers

are to be victualled from the hospital, at the same rate of ration as the sick.

On no account are the physicians or attendants, to be permitted to *take up* any aliments or other articles of consumption, even though they return pay for the same.

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As I have in the preceding pages, when speaking of the French regulations, employed the new nomenclature of their weights and measures, it may not be amiss, to give the value of these in our own weights and measures ; they are as follow :

A metre, is about 3 feet, and 1-3rd of a foot.

A decimetre, is nearly 4 inches.

A centimetre, is nearly 4-10ths of an inch.

A millimetre is .03938 decimals of an inch.

A kilolitre, is 264 gallons, and 1-3rd of a cubick inch.

A hectolitre, is 26 gallons, 4 1-3rd cubick inches.

A decalitre, is 2 gallons and 64 1-3rd cubick inches.

A litre, is 2 pints, and nearly 1-8th of a pint.

A kilogramme, is 2lbs. 2oz. 5drms.

A hectogramme, is 3oz. 8 1-2drms. avoirdupois.

A decagramme, is 6dw. 10grs. 44 hundredths.

A gramme, is 15grs. 45 hundredths, Troy weight.

## SECTION XII.

### *Of the Introduction of Patients into the Hospital.*

The patients who are brought to the hospital, should be first conveyed to the *receiving-room*, which ought to be a small unfurnished room, with a fire-place or stove, and containing only a couch and one or two chairs. They are here to be visited by the physician



or the surgeon, (according as they are to come under medical or surgical treatment,) and examined respecting the nature of their complaints. They should then be assigned to their proper ward, previously to entering which, they should be made to change the clothes they may have on, for a suit of clean, dry, hospital apparel. These clothes, as well as any others they may bring with them, ought to be deposited in the *receiving-clothes-room*, until they be well washed; they are afterward to be placed in another *clothes-room*, in racks alphabetically lettered. The patient's name, with the number of his ward and bed, should be affixed to these clothes, and deposited in that rack which has the initial letter of his name.

Besides changing the apparel, the patient, before going into his ward, should undergo a process of complete ablution, if his condition will admit it.

He should be put in the warm or cold-bath, as the physician or surgeon may think proper; be well cleansed; have his hair combed; and when thus purified, and habited in his clean suit of hospital-apparel, should be conducted to his bed in the ward appointed for him.

No patient ought, on any consideration, to be introduced into any ward, without having previously undergone this professional examination, and this very necessary purification. Should the patient or patients be brought into the hospital too late at night to submit conveniently to this ablution and change of dress, he should be placed for the remainder of that night in an *anti-ward*, destined for this purpose, by himself, where he should be well attended, and, as early as convenient and proper on the following day, should be treated as above, and then sent into his proper ward.

The nurses and orderly-men should attend, to see that the new patients clean themselves properly, and to

afford their assistance to such as are unable to aid themselves.

The mischief arising from a neglect of these precautions, will be very great, and fraught with the most ruinous consequences to the sick of the ward into which the patient should be introduced. All persons who have had any thing to do with a number of sick persons collected together in hospitals or ships, are sufficiently aware of the danger of introducing among them one unclean and infectious person. I once witnessed it during my residence in the Pennsylvania hospital, and have repeatedly had occasion to observe it on board ship, when new men were sent from shore.

While I was attending physician and surgeon to the army in the city of Philadelphia, and that part of the 4th military district in its vicinity, I had more than one opportunity of observing the pernicious consequences of introducing among disciplined men, who lived upon the regular ration, raw recruits, perhaps recently from jail; infected with foul eruptions, and offensive from indulgence in the gross intemperance they generally give themselves up to, while the bounty-money lasts. It was particularly observable in the camp at Mantua, near Schuylkill, and in all the different rendezvous in the city and liberties. I never failed to have some patients in a tent, where six or eight soldiers, who had been some time tented together, were joined by one, two, or more, filthy recruits. This circumstance can very readily be accounted for, independently of the supposition that these recruits carried about them the seeds of a contagious disease. The effect of the noxious effluvia from the body of a foul and contaminated man, labouring under the diseased state of system consequent to long continued intemperance, upon those

who are in regular habits, particularly when we advert to the circumstance of these loathsome creatures being obliged to sleep in the same tent with the healthy soldiers,—must be obvious to every one. During my visits to the sick of the army quartered at the U. S. Lazaretto, on the Delaware and Schuylkill, in April last, I was forcibly struck with the impropriety, and even danger, of introducing into the wards of an hospital containing any sick, either sick recruits, or sick soldiers, without previously purifying their bodies by ablu-tion, and keeping them in that state by clean apparel. The convalescents never failed to grow worse after such a measure.

One more fact on this subject I was made acquainted with by the assistant-surgeon of the *Romulus* English frigate, commanded by lord Balgonie, and which anchored under our stern\* in Barnpool, (Plymouth, Eng.) having just arrived from the Peninsula, with French prisoners. The crew of the *Romulus* was perfectly healthy while at Lisbon, where she took on board eighty or an hundred French prisoners, and sailed for England with them. The prisoners were also healthy, and continued so. A short time after their embarkation, a genuine typhus carcerum, of the malignant kind, broke out among the crew of the *Romulus*; the French prisoners continuing perfectly healthy, though they were more confined below decks than the crew of the ship, and their diet and treatment being the same. This circumstance proves most satisfactorily, the propriety and healthfulness of the mode I have recommended of introducing patients into the wards of the hospital.

\* *Essex* frigate.

## SECTION XIII.

*Of the Officers of the Hospital.*

The officers and persons requisite for the government and conduction of each naval hospital to be established in the United States, are the following :

A governour.

A physician.

A surgeon.

A dispenser.

Two lieutenants.

An assistant-physician.

Two surgeon's-mates.

An hospital-mate, or assistant-dispenser.

An agent.

A chaplain.

A steward.

A deputy-steward, or ward-master.

A matron.

Nurses and orderly-men.

A baker.

Laundresses.

A cook.

An assistant ditto.

A scullion.

A barber.

Servants and labourers.

A guard.

The officers above-mentioned, are enumerated on the supposition that the hospital will be so extensive as to accommodate from three to four hundred patients, and one hundred pensioners. From this list it will not be difficult to select the requisite number for the administration of such institutions, as may be designed to receive and provide for 100, 150, 200, or 250 patients, and a proportionate number of pensioners.

## SECTION XIV.

*Of the Governour.*

The governour of the hospital, in imitation of the English service, I would propose to be a post-captain in the navy, advanced in the service. He should reside in a neat and commodious suit of apartments, fitted up for his habitation, or in a small and comfortable house attached to the hospital, and within its walls. His duties are various, and such as his title would import. He should have the entire general direction of the institution under his immediate charge and authority. He should issue such orders for the internal arrangement of the establishment, as he may consider conducive to its better regulation and operation. He should attend to the reports of the physician and surgeon, and should afford his ready co-operation in all matters proposed by them for the benefit of the institution. He should attend at the *council-room*, at stated hours every morning, for the purpose of transacting the business of his office. He should inspect the returns of the physician, the surgeon, the dispenser, the agent, and the steward of the hospital; and when inspected, should file them, and deposite them in his office.

He should, every six or every twelve months, make out, or cause to be made out, such an abstract from these returns, as will exhibit the proceedings of the hospital for that time, and send it to the secretary of the navy's office.

He should require all officers of the hospital to obtain his permission for leave of absence, when they



desire to go without side the walls. He should maintain a nice inspection of the conduct of all the officers of the hospital, and over the economy of the household in general. His salary should be liberal.

He should always wear the uniform of a post-captain, when sitting upon business in his council-room, and when engaged upon any other duty of the hospital.

## SECTION XV.

### *Of the Physician.*

No medical man should be elected physician of an hospital, who has not taken the degree of *Doctor of Medicine*; and a preference should be given to such medical men as are in the U. S. naval service. He should reside in a building, or in apartments appropriated for him, within the walls of the hospital. He should have under his care, all the medical patients who are sent to the hospital, and should attend likewise, such of the surgical patients, as the surgeon may desire him to visit and prescribe for. He should take his rounds in the hospital, at a regular hour every morning, attended by his assistant and the nurse of the ward he is visiting. He should enter his prescriptions in a printed bill, for that purpose, a form of which I will presently exhibit. He should likewise visit the sick in the evening, and oftener if necessary, of which he will be the proper judge.

He should be invested with authority and power to make any arrangements in his department, which he may judge expedient, and for the benefit of the sick, and the hospital. Such arrangements, if they be of a trivial nature, he may direct the steward to make, and if any thing of more than common importance, he should report them as necessary to the governour, who

ought to give proper orders on the subject. He should give such verbal directions to his assistants, as, besides his written prescriptions, he may deem necessary, for the good care of his patients. In a word, he is to perform the *duty of a physician*, which either in a hospital or elsewhere, consists in a humane attention to the diseases, and necessities of the sick under his charge, to the best of his abilities.

The following form of a printed prescription bill, I would propose for adoption in the U. S. Marine Hospitals. It answers not only for a prescription-bill, but as a voucher for the steward and hospital dispenser, for the correctness of their statements of expenditures.

The use of this bill will promote method in the department of the physician and surgeon; facilitate the duty of the assistant-dispenser; and is, besides, a brief record of the patients case, as well as a history of his treatment. The blank bills of this form should be carried round the hospital, by the physician and surgeon in their visits to the sick, and should be filled up, as the patients' case may require, by specifying the quantity of any particular article prescribed, in the column assigned to it. They should be delivered to the assistants, who should carry them to the assistant dispenser for execution; when filled up, they should be carefully filed for the purpose above-mentioned.

The size of this bill, is contracted to bring it into a page. When a number of them is to be printed for the above purpose, the columns for necessities, &c. should be six or eight inches longer, and those for the "disorder," and "medicines prescribed," extended in breadth, at least two inches each. When one is filled up, another is to be used, and so on, as often as requisite.



## SECTION XVI.

*Of the Surgeon.*

The surgeon of the hospital, should be a man skilled in the science and practice of surgery. A preference should likewise be given in a choice of this officer, to one of the oldest surgeons of the navy, who may be distinguished for ability and energy. He should likewise reside within the bounds of the hospital, either in a separate building, or in apartments appropriated for his use. He should have under his charge, all the surgical patients of the hospital, and should perform all operations necessary to be done there. For this purpose there should be a commodious operation room, so contrived that the light may be abundantly and properly thrown on the operating table. He should visit his patients once a day, or oftener as he may think necessary and proper, attended by his assistants, and the nurse of the ward he visits. His jurisdiction over his own department should be uncontroled, and the steward, upon his requisition, should make such arrangements in it, as he shall specify for the benefit of his patients. Any arrangements of magnitude however, the surgeon should report as necessary, to the governour, who should immediately order their execution.

Both the physician and the surgeon should keep a book, in which should be recorded the names of their respective patients, the dates of their admission into the hospital, and the outlines of their treatment. The termination of their disease, should likewise be mentioned, in cure, discharge or death, as may happen. They should exact from the surgeon of any

vessel, or in his absence, from the acting-surgeon or surgeons'-mate, sending a sick man or men to the hospital, a history of the disease, with which he or they may be afflicted, and an account of the treatment that has been pursued with them. These they should file or have recorded, in such a manner, that access may be readily had to them.

I think it would be a good plan, for the physician and surgeon, to make out abstracts from their books every three months, comprising the names of patients admitted during the quarter preceding, the dates of their entry, the names of their diseases, the vessels or places from whence they came, and the times of their discharge, cure, or death. These quarterly returns should be sent into the *council-room* on the first day of every quarter, for the inspection of the governour, who should transmit them to the secretary of the navy's office, there to continue as publick documents of the state of the hospital.

## SECTION XVII.

### *Of the Dispenser.*

The Dispenser of the hospital should be a practical apothecary. He should have under his sole direction, the laboratory and apothecary-shop, or dispensary. He should prepare all medicines, tinctures, syrups, cerates, ointments, &c. usually manufactured by the apothecary, and deposite them in the dispensary, for the use of the hospital and U. S. vessels. He should superintend the economy of the dispensary establishment, and be responsible for all the medicines, articles, shop-furniture, and utensils appertaining to it.



He should inspect all medicines and medicinal articles purchased for the hospital, previous to their being received into his store-rooms, and should report their good or bad condition, and whether the charges for them are reasonable or exorbitant, to the agent. He should make out quarterly-returns of the expenditures of the dispensary, for the authenticity of which, the prescription-bills of the physician and surgeon, and the receipts of the agent for articles drawn for his department, will be sufficient vouchers.

## SECTION XVIII.

### *Of the Lieutenants.*

There ought to be two lieutenants attached to the hospital, who should be chosen from among the oldest on the naval list. The general outlines of their duty may be comprised in a few words. They should be assistants to the governour of the hospital, in the execution of the various functions appertaining to his important office. They should reside in apartments, fitted for their accommodation, in the hospital. They should transact all out-door business of a general nature, and should afford a willing and prompt acquiescence in all orders and injunctions of the governour. They should keep such records of the household as the governour may deem necessary and proper. They should act as supervisors of the minuter regulations of the establishment, and should exert all their authority and care, to preserve the harmonious progression, and accurate operation, of all the different departments in the hospital; taking care, however, to make no improper interference with the professional departments,

with the economy of which they cannot be supposed to have the requisite acquaintance. When on particular duty, they should be distinguished by the undress uniform of a lieutenant in the navy. They should divide their duty by agreement between themselves.

## SECTION XIX.

### *Of the Physician's Assistant.*

The assistant to the physician, who ought to have the commission of a surgeon's-mate, should be a young man possessed of considerable medical information, and should have been some time in actual sea-service, either in the capacity of surgeon's-mate, or acting-surgeon. His general duty, as his title imports, should be to assist the physician in the discharge of the functions attached to his office. He should attend the physician in all his visits to the sick, and should prescribe for his patients in his absence, or upon any sudden emergency. He should visit these patients frequently, and at all hours, to see that they are not in want of any thing, and that the nurses do their duty. He should see that the nurses receive from the assistant-dispenser the medicines, and from the steward the comforts, prescribed and specified in the prescription-bills. He should perform all the operations of bleeding and cupping necessary for the patients under the care of the physician; and should, in the intervals of his visits, make any trivial alterations in the patients' treatment, that he may deem proper; but all changes of any importance should come from the physician himself. He should report all sudden changes in the patients' condition for the worse, immediately to the physician. He

should keep an exact record of his own prescriptions, which he should exhibit to the physician, informing him at the same time, his reasons for any alterations he may have made. He should on no account whatever, fail to administer any medicine or medicines prescribed by the physician in his morning or evening visits, without stating to him the changes that may have occurred in the interval of his visits, and the time specified for the administration of the medicine, which may have made it proper to omit the prescription. He should attend upon the sick with humanity, tenderness, and fidelity ; and should, in all dangerous cases, watch during the night with them. He should report all irregularities that fall under his observation, to the proper persons invested with authority to correct them. He should, in time of very great press of business, afford any reasonable assistance in his power, to the assistants of the surgeon, in the discharge of their duties. But he should by no means be called upon for such assistance, except in cases of actual necessity, where these assistants have more business to attend to, in the opinion of the surgeon, than they are able properly to execute ; and even then, not if his own avocations occupy his entire attention.

## SECTION XX.

### *Of the Surgeon's Assistants.*

The surgeon's assistants of the hospital, should be surgeons'-mates in the navy of advanced standing and considerable experience, who have been some time in the sea-service in the capacity of surgeon's-mates,

or acting-surgeons. They should assist the surgeon in the discharge of all his duties, and in performing operations particularly. They should bleed, cup, dress the wounds and ulcers, of all the surgical patients in the hospital. They should visit these patients with the surgeon in his daily rounds, should attend to his verbal directions concerning them, and should give such information to him respecting the state of their disorder in the interval of his visits, as they may deem it serviceable for him to learn. They should have under their care all the instruments belonging to the surgeons' department of the hospital, and should be required to keep them in perfect cleanliness and order. They should be responsible for the safe-keeping of them. They should see that the patients of the surgeon are supplied with all the comforts and necessaries ordered for them, and that the medicines prescribed in the day-bills are prepared for the nurses, and administered faithfully by them, to the sick. They should keep journals of all cases in the surgical department, and should be held responsible for the faithful execution of all the orders of the surgeon. They should be kind and conscientiously humane in their attentions on the sick, and particularly assiduous in their care of patients who have recently undergone operations, and should watch with them at night when the surgeon shall deem it necessary. For the sake of preserving harmony between them, this duty should be performed in alternation. For the purpose of dividing the general duty of the hospital, the surgeon should apportion a certain number of wards to each of them, for the care and superintendence of which they should be accountable.

They ought to extend all necessary aid to the physician's assistant, when the physician shall think he

stands in need of it, and when their own duty does not engross their entire time. But this assistance should never be resorted to except in cases of emergency.

## SECTION XXI.

### *Of the Assistant-dispenser, or Hospital-mate.*

The assistant-dispenser, or hospital-mate, should be a young man who has resided at least two years with an apothecary, and who is tolerably skilled in pharmacy. His general duty should be to assist the dispenser in his pharmaceutical operations. He should prepare the prescriptions of the physician, the surgeon, and their respective assistants, according to the morning bills delivered to him by the assistants. When the different medicines prescribed are prepared, he should carefully affix the name of each patient, and the number of his ward, to the medicine intended for him, and should then deliver the whole to the nurses of the respective wards.

In the English service, the hospital-mates are candidates, after a year or two years' service, according to their qualifications, for the situation of assistant-surgeons in the navy. This is a judicious arrangement; since their residence as hospital-mates, gives them an insight into pharmaceutical knowledge, very requisite for the assistant-surgeons, besides enabling them to see a great deal of naval surgical practice, which peculiarly fits them for embarking in their career in the sea-service. It would be well, I think, to imitate this arrangement in our naval hospitals;—we should then have persons commissioned as surgeons'-mates, who would be every way qualified to discharge the duties of their station with ability.



The assistants of the physician and surgeon should wear an undress uniform at all times; and they, as well as the dispenser and his assistant, should reside in the hospital.

The physicians and surgeons of the royal naval hospitals in England, wear an uniform differing from that of officers of their grade afloat, only in the button. This difference consists in the impression, in addition to the common stamp, of initials designating their stations. The physician has on his buttons the initials H. P. hospital-physician; the surgeon H. S. hospital-surgeon. They, as well as their assistants, are obliged to appear on duty, constantly in an undress uniform. It would be proper, I think, to adopt this regulation in our service. The present eagle-button should be stamped with the letters H. P. for the physician, and H. S. for the surgeon. These minutiae may appear trifling, but they all contribute to the general system and regularity.

## SECTION XXII.

### *Of the duty of the Agent.*

The agent should be a man of respectability and trust, as his is an office of great responsibility and temptation. He should likewise be possessed of abilities for business, and alertness in the conduction of it. He should have under his charge all the publick property deposited in the hospital, which he should see kept in a state of preservation. He should be contractor-general, and purveyor of the hospital. He should receive all proposed contracts for furnishing the hospital with the articles, stores, and liquors, requisite in its different departments; and should submit such of them as he might deem proper for acceptance, to the

inspection of the governour of the hospital, with whose approbation and concurrence he should file them for reception.

He should superintend the purchase of all provisions, and see that they be of a good quality when furnished—likewise of all the articles of the medical department of the navy, not contracted for by the agents of the *board of medical commissioners*\*—also of all the clothing, bedding, hospital-utensils, fuel, &c. consumed or employed in the hospital. He should have the general superintendence of all the medical store-rooms and cellars in the hospital, and should attend in person, to the furnishing from them, such ship or ships as may want out-fitting or replenishing, with the necessary and established proportions of medicines, comforts, &c.

He should see that his *clerk*, or *sub-agent*, preserves the nicest arrangement in his store-rooms and cellars, and that he keeps the instruments, medicines, and liquors contained in them, in a safe condition, and in regular order, so that a ship can be fitted out on the shortest notice. That a respectable man, and one of ability, may be procured for the office of agent, a liberal salary ought to be afforded by the government, and also convenient rooms for his residence in the hospital; or, if that be impracticable, in the vicinity of it. The agents in the royal hospitals of Haslar and Plymouth, receive a salary of 350*l.* sterling per ann. and are furnished with commodious houses, or suits of apartments, in the area of the hospitals.

The agent should be furnished with printed bills, specifying the proportions of medicines, utensils, and hospital comforts, for the vessels of different rates, as

\* The establishment of such a board I have proposed in another part of this work.

established by the board of medical commissioners, or by the secretary of the navy. He should always keep in readiness, for delivery on board such ships as may want them, chests of a convenient size, containing canisters of proper compass for the allowed comforts, which may be filled at a short notice. He should paste on the inside of every such chest, a printed bill of the established allowances of all the different articles furnished for the medical department, for which the surgeon of the vessel should receipt to him, upon their safe delivery on board.

The advantages in point of promptness, accuracy, and economy, arising from such a method of furnishing the medical department of ships of war, over that loose and irregular system now in use in our navy, would be incalculably great.

## SECTION XXIII.

### *Of the Chaplain.*

The chaplain should belong to the navy. He should reside in the hospital. He should read prayers twice a week to the patients who are unable to leave their wards. He should preach a sermon every Sunday morning in the chapel belonging to the hospital, and perform divine service both morning and afternoon. He should attend the funerals of all the patients who are buried from the hospital. He should attend such as desire his consolation in their last hours; and should exhibit, by his pious and upright conduct, a good example to all persons in the hospital. In fine, he should do all manner of offices usually appertaining to his station. He should have taken orders in the church.

## SECTION XXIV.

*Of the Steward.*

It is not more necessary that the agent should be a man of integrity, than that the steward should be a man of the sternest honesty and sobriety. His character should, on these points, stand the strictest scrutiny. He should moreover be a man of method and activity. He should have under his charge, all provisions used in the hospital, and all the liquors and comforts for the sick. The provisions he should see cooked in a proper manner, and formed into the different diets established by the Diet Bill; (see article *Diet of the Hospital*,) and the liquors and comforts he should furnish to the ward-master or nurses, as may be found convenient, upon their delivering to him the prescription-bill of the day. These bills he should file in regular order, and produce them as vouchers for the correctness of his expenditure returns.

His returns should be made out on the first day of every month, and should exhibit the total amount of the expenditure of provisions, liquors and necessaries for the sick, during the preceding month; they should be sent to the governour of the hospital for his inspection. They should previous to this, however, be signed by the physician and the surgeon of the hospital, whose signatures (which should not be afforded till the steward has submitted to their inspection the files of their prescription-bills for the time his statement specifies an expenditure) ought to be considered by the governour as a proper ratification of the steward's accounts. The steward should have under his charge, all the

warming the wards, &c. be punctually performed. He should inspect the mess-table when prepared with breakfast, dinner, and supper, for the convalescent and such sick as are able to eat at it, previous to the bell being rung for their assemblage ; and should see that every thing is in a decent, comfortable, and proper condition. He should report all irregularities of any importance that may fall under his notice, to the steward, and should correct all such as are of a trivial nature himself. He should take care that no games of any description are played by the patients, nurses, or other persons employed in the hospital ; and that no liquor, nor food of any kind, be brought into the wards by the nurses, patients, or the friends of either who may visit them, other than those prescribed and allowed by the physician and surgeon. He should see that the wards be kept properly heated, and that the beds, bedding, clothing of the patients, &c. be preserved as clean as possible. He should order such mattresses, bed-pillows, fracture-pillows, and the like, as are wetted, and too much matted from use, sent to the *hair-room*,\* to be opened and dried. He should visit the wards at a regular hour before going to bed, and see that all unnecessary lights are extinguished, and that the fires are safe.

\* The hair-room is an apartment so called in the English naval hospitals, and indeed in some of the London hospitals, in which all the old beds are opened, and the hair picked and dried. It is then made up into new mattresses, &c. This practice, I was informed by the surgeons of these institutions, was a saving of half the number of beds formerly expended in the hospitals. Many mattresses apparently damaged and useless, are made anew in this way. Besides the economy of this plan, it is productive of great advantages in point of health, cleanliness, and comfort, to the patients. Old men or women, maimed or lame in their legs, and other useless persons or patients, are employed in this business. I have seen rooms in Haslar and Plymouth hospitals, of considerable size, filled to the ceiling with old matted hair—the whole of this is picked by the hands, and made anew.



He should, as well as the steward, be a man of sobriety and decorum, as he has it in his power to check or encourage a vast number of abuses and neglects—to connive at or suppress any licentious behaviour in those under his eye, according as he is himself a man of correct and upright conduct, or corrupt character.

## SECTION XXVI.

### *Of the Matron.*

The matron should be a discreet and reputable woman, capable of attending to business. She should be neat, cleanly, and tidy in her dress, and urbane and tender in her deportment. She should have a general controul over the nurses and orderly-men, assistant-nurses, ward-attendants, and all women and men employed in the laundry, the larder, the kitchen, &c. She should have under her charge the clothes and linen-rooms, and should see that every article deposited in them be cleanly washed and well dried, and in their proper places. She should visit the wards frequently, and see that the nurses attend to their duty there, and that they make up the beds in proper time. She should visit the wash and ironing-house frequently, and see that the clothes, linens, &c. are well washed, ironed, and dried, before they are placed in the racks and shelves destined for their reception. She should likewise superintend the dairy, the milk-house, and the kitchen, and see that the cooks perform their duty.

## SECTION XXVII.

*Of the Nurses and Orderly-men.*

The nurses, whose number should be proportionate to the extent of the hospital, and number of patients, should be women of humane dispositions and tender manners; active and healthy. They should be neat and cleanly in their persons; and without vices of any description. They should reside in small convenient apartments adjoining the wards they belong to. They are to attend with fidelity and care upon all the sick committed to their charge; should promptly obey their calls, and, if possible, anticipate their reasonable wants. They should administer all medicines and diets prescribed for the sick, in the manner and at the times specified in their directions. They should repair, at an appointed hour, to the *dispensary* and the *provision-room*, to receive from the assistant-dispenser and the steward, the medicines and comforts prescribed. They should be watchful of the sick at all hours, and should, when required, sit up with them at night. They should attend the physician and the surgeon in their visits to the wards, to give information respecting the patients, and to receive orders and directions. They should make up the beds, and keep the wards clean, and should report to the assistant-physician and surgeons'-mates, whenever it is necessary to have them washed; and should not wet them, when they think proper, for the sake of the sick, to omit it at that time. They should report all sudden changes in the disorders of the sick, and all deaths, immediately to the assistant-physician or surgeons'-mates. They should obey punctually all orders from their superi-

ors ; and should exact a ready acquiescence in their commands, from the attendants under them.

The orderly-men are nothing more than *male-nurses*, and their duty is to assist the former. A certain number of them is requisite and useful. They can perform many offices in attending upon *sick-men*, that women could not decently attend to.

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The other persons mentioned as necessary for the conduction of an hospital, are, the baker, the laundresses, the cooks, the scullion, the barber, servants, and labourers. The offices to be performed by these, are so well understood, that it is unnecessary for me to say any thing on the subject. There ought likewise to be attached to every naval hospital, for the purpose of better governing the same, a guard, of which I shall now speak.

## SECTION XXVIII.

### *Of the Guard.*

The hospital should be furnished with a serjeant's-guard from the marine corps, which should be relieved regularly once or twice a day, as convenience may direct. The men composing the guard should prevent the entering of all improper persons, and the exit of any of the patients, nurses, or other inferiour officers employed about the hospital, without they exhibit a printed ticket for leave of absence, signed by the governor, one of the lieutenants, or the physician or surgeon of the hospital. They should obey all orders and injunctions given to them by the serjeant of the

guard, who is to receive his proper instructions, or his day-orders, from one of the lieutenants of the hospital. One of the guard is to be employed as janitor or porter, and he should be relieved every four hours.

## SECTION XXIX.

*Rules and Regulations for the government of the patients and pensioners, and the preservation of order and quietness in the Hospital.*

### I.

Every patient in the hospital shall be obliged to wash his face and hands, and comb his hair before breakfast. Those patients who are unable to perform this ablution themselves, must be assisted in doing it, or have it done for them, by their neighbour patients or nurses of the ward. Such patients must be washed with luke-warm water.

To facilitate this business, each ward should be furnished with two or three tin washing-basins ; and long rolling towels should be hung up on the doors, or in other convenient places.

### II.

If any convalescents or pensioners neglect or refuse to perform this process, the nurses must deny them their breakfast until it be done.

### III.

All patients or pensioners that are able to rise from their beds, and continue up during the day, are to dress themselves before breakfast, and keep themselves neat and clean. If any refuse, who are capable

of doing so, the nurses must report them to the ward-master.

#### IV.

Every patient must consent to be shaved when the barber takes his rounds through the wards, if possible. Should any good reason appear for declining to submit to this operation, at the usual hour, the barber shall in such case return at a time when it may be convenient to the patient.

#### V.

Every patient shall keep his clothes, and what little matters he may be permitted to bring into the hospital to amuse himself and beguile his time, in the drawer of the table at the head of his bed, or in a small box, or on a shelf, or in whatever convenience for this purpose the wards of the hospital may be furnished with. He is enjoined to preserve, in so far as he is able, every thing about his own bed in order and cleanliness.

#### VI.

There is to be no gaming nor smoking in the wards or other apartments of the hospital. Those who smoke tobacco, are only permitted to do it in the court-yards, or other walking-places.

#### VII.

No patient is permitted to spit on the floors of the wards, enteries, or other apartments of the hospital; nor throw any filth or dirty matter, either on the floors or out any of the windows of the hospital. That the patients may have no excuse for infringing this rule, each ward should be supplied with a sufficient number of spitting-pots, containing sand, which the nurses are to have emptied every morning.



## VIII.

There is to be no profane swearing, vociferation, nor loud talking, in the wards of the hospital; nor any noise made by any person, calculated to disturb the quietness of the patients.

## IX.

If any patient be guilty of drunkenness, or is turbulent and refractory, or is convicted of any riotous behaviour, or other scandalous conduct, the nurses shall report such person to the ward-master for punishment.

## X.

No patient in the hospital shall quarrel with any other patient, nor any other person whomsoever, nor use provoking or reproachful words, gestures, or menaces, to any one. Any patient guilty of such impropriety, shall immediately be reported to the ward-master for punishment.

## XI.

If any patient be found guilty of stealing from any person in the hospital, or of purloining any articles of clothing or other matters from another patient, he must be punished.

## XII.

No patient shall leave the hospital on any pretence whatever, without a liberty-ticket, specifying the number of hours he is permitted to be absent, signed by the physician or surgeon, and countersigned by the governour, or one of the lieutenants.

## XIII.

Any patient who has left the hospital on liberty, and returns intoxicated, or over-stays his time,

by more than one hour, shall be deprived of his beer allowance for three days, and forfeit any title to obtain a second leave of absence, while he continues on the the hospital-books.

#### XIV.

Any pensioner who is guilty of the abovementioned improprieties, shall also forfeit his beer allowance, and lose his right to a leave of absence for one month.

#### XV.

If any patient, who leaves the hospital upon liberty, shall be absent more than four and twenty hours, he shall be considered as a deserter, and apprehended and treated according to the laws and usages of the navy.

#### XVI.

If any pensioner who leaves the hospital upon liberty, over-stays his time by forty-eight hours, he shall also be considered as a deserter; his name shall be marked "RUN," on the hospital-books, and he shall forfeit his pension for six months.

#### XVII.

No patient shall be granted a longer leave of absence than twelve hours; and no pensioner liberty exceeding forty-eight hours.

#### XVIII.

All patients in the hospital, shall be obedient to the proper and legal orders of the nurses, assistant-nurses, ward-master, steward, matron, and indeed all persons in authority.

#### XIX.

If any officer-patient shall disobey any of the rules

or regulations of the hospital, or refuse to follow the advice and prescriptions of the physician or surgeon, they shall, for the first offence, remonstrate with him upon the impropriety of such behaviour. If he repeats his offence, he must be reported to the governour of the hospital, and be reprimanded by him in the presence of the physician and surgeon. Should he persist in his misconduct, he shall be immediately discharged from the hospital, if his condition will permit it; and forfeit a right to any allowance for sick-quarters, or medical aid.

## XX.

If any other than an officer-patient be guilty of such infraction of the established regulations, he shall, for the first or second offence, be punished according to the will of the governour. His contumaciousness in offence shall be punished by an immediate confinement in a solitary room, during his continuance in the hospital.

## XXI.

It shall be the duty of patients in a sick ward, to reciprocate and interchange with their fellow-patients, and sufferers in disease, such little offices of kindness, humanity and attention, as they may be able to afford, for the comfort and convenience of the whole.

## XXII.

All crimes, misdemeanors, and offences, not specified in this code of laws and regulations, for the government of officer-patients, patients, and pensioners, are to be punished and corrected according to the usages of the navy on ship-board, and other service.

## XXIII.

That ignorance of the rules may not be plead

in excuse for violating them, a printed copy of them should be neatly framed, and hung up in some conspicuous part of each ward; and since many of the patients may be unable to read, they should moreover be read aloud by the ward-master every Sunday morning after a muster of the patients, in each ward of the hospital.

### SECTION XXX.

#### *Miscellaneous Rules and Regulations respecting the internal police of the Hospital.*

##### I.

No sick person belonging to the navy, shall be received into the hospital without an order signed by the surgeon, and counter-signed by the commander, of the ship, navy-yard, marine barracks, or post, to which he belongs; and it shall be the duty of the surgeon to send with such sick person, a brief history of his case and treatment.

##### II.

No pensioner shall be admitted into the hospital, without an order from the secretary of the navy.

##### III.

When a sick seaman, ordinary seaman, marine, or boy, is sent to an hospital from a vessel, or any post to which a purser is attached: the purser must send with such sick person, a statement of his account. This shall be transmitted to the purser of the ship, navy-yard, or station, to which the patient may be sent when discharged from the hospital.

## IV.

Any case of sudden accident may be admitted without the usual forms.

## V.

Any persons attached to foreign national vessels, may be admitted into the hospital, if the consul or agent of the power to which such vessel may belong, will agree to pay a requisite and just sum per week ; and to defray the funeral charges, should the patient die.

## VI.

No officer or person connected with the administration of the hospital, shall have any interest, either directly or indirectly, in the furnishing of hospital supplies.

## VII.

Any officer convicted of embezzlement of hospital property of any kind or description, shall be cashiered, and obliged to refund the amount of the articles so appropriated.

## VIII.

The ward-master is to see all lights put out at eight o'clock in winter, and nine in summer, except those that are absolutely necessary for the convenience of the sick.

## IX.

When a patient dies, it shall be the duty of the ward-master to take an inventory of his effects as soon as convenient, and deposite them in a place of safe-keeping, till called for by the persons entitled to them.

## X.

When an officer dies, the steward shall take an inventory of his effects and papers, and seal the latter



up. He shall deposite them in a safe place, till they are claimed by those entitled to receive them.

#### XI.

The dead shall be immediately removed from the wards after their demise, into the dead-house; and if an officer, into an apartment appropriated for that purpose in the hospital.

#### XII.

It shall be the duty of the ward-master to attend all funerals, and see that they be conducted with becoming decency and propriety.

#### XIII.

All clothing, and other property belonging to the patients, officer-patients, or pensioners, who have been deceased nine months, shall, if they be not claimed after sufficient advertising after that period, be sold for the benefit of the hospital.

#### XIV.

If any officer refuse to observe the rules and regulations of the hospital, or refuse to obey the just and proper commands of the physician, the surgeon, or others in authority, he shall be discharged from the hospital.

#### XV.

Every person in the hospital, except the medical officers, the governour and lieutenants, the steward, the agent and other officers, shall receive a daily allowance of provisions equal in value to a navy ration, that is, twenty cents per day.

#### XVI.

The floors of the wards shall be carefully washed twice every week, and swabbed dry. It is positively

prohibited, however, that this process should at any time be begun, without first obtaining the consent of the physician or surgeon, or their assistants.

When the floors are to be washed, those patients confined to their beds are to be carried on them into an adjoining ward, and not brought back until the floor be thoroughly dried. The walls must be white-washed thrice a year, or oftener if necessary.

#### XVII.

No relation or acquaintance shall be permitted to visit any of the patients in the wards, without a written order from the assistant-physician or surgeon's-mate.

#### XVIII.

No strangers shall be admitted into the wards; and the nurses are strictly enjoined not to permit any unnecessary visits.

#### XIX.

When a patient is discharged from the hospital, a receipt shall be taken for him from the person into whose charge he is delivered.

#### XX.

It shall be the duty of every officer in the hospital, to enforce the observance of these rules; and to co-operate so far as in his power lies, with his colleagues, to maintain subordination, harmony, and quietness in the institution.

## SECTION XXXI.

With a view to render the subject of these pages more complete, I subjoin the following report made by Benjamin Henry Latrobe, esq. engineer of the U. S. navy department, to the late secretary of the navy. It exhibits a calculation of the probable expense of erecting a marine hospital, calculated to contain for the present 100 patients, and a proper proportion of pensioners. The well known talents of this gentleman, render any apology for inserting his report at length, unnecessary.

*Mr. Latrobe's Report on Marine Hospitals.*

The Honorable Paul Hamilton, Secretary of the Navy of  
the United States.

Washington, July 3d, 1812.

SIR,

Agreeably to your direction, I respectfully submit to you the annexed report and design of a marine hospital, formed agreeably to your instructions—"that it should present such an arrangement, as, for the present would accommodate 100 patients, in a building, plain and substantial, and capable of being so enlarged, as at some future day to form an establishment adequate to the increased wants and means of the country."

I am with high respect,

Your obedient humble servant,

B. HENRY LATROBE,

Eng. Navy Dep. U. S.

Report of B. Henry Latrobe, on his design for a Marine Hospital, respectfully submitted to the Secretary of the Navy, U. S. the Secretary of the Treasury and the Secretary of War, Commissioners appointed by law, of the Marine Hospital Fund. July 3d, 1812.

1. The extent of an hospital establishment depends principally, and originally on the quantity of space which it may be deemed sufficient to allow to each patient, or convalescent, with a view to health and convenience.

2. The extent of such an establishment will also be affected by the mode of lodging the patients; whether many or few are lodged in each ward together.

3. Without discussing theoretically any part of the merits of the question, whether large roomy wards in which patients are lodged together, or whether smaller wards containing few patients in each, are in a medical view preferable, I will only state that I have adopted the latter system from my own conviction that it is the best in a medical point of view, but principally because more patients may be safely accommodated in less space in this arrangement, than in the former.

4. In the erection of every publick building, to economize space is to economize expense. With the limited fund of the hospital therefore, the first consideration in forming the design was to cover as little ground as possible; because the materials and workmanship being the same, the only comparison between two different plans in view of their expense would be, as to their areas.

5. The design presented to the commissioners, as far as it goes, consists of two parts; the hospital for

the sick, and the house of the steward, or of whatever officer may preside over the institution.

6. In examining this plan, it will be necessary in the first place to enquire into the adequacy or redundancy of the space allowed to each patient. It will be found on inspection that each story is divided into 8 spaces, six larger and 2 smaller ones. The two latter contain, the one the stair-case, the other I have called the tub-room, the use and necessity of which I shall hereafter explain.

The wards allotted to the patients are six; they are 24 feet from north to south, and 20 feet wide. The bedstead of a patient ought not to be less than 6 feet long, although they are sometimes only five feet nine inches; and 3 feet wide. Each bed requires to admit a chair, or the passage of a nurse or physician, 18 inches at the least, by its side; which makes a square of six feet necessary for each bed. In these wards, therefore, there may be placed on each side 4 beds, and between their feet there will be a passage of 8 feet from north to south. This is the minimum, therefore, of accommodation which is safe. But if the bedsteads are made only 2 feet nine inches wide, and the passage between the beds only 2 feet, then 10 patients may be crowded into such ward. Every medical man however would condemn such arrangement, however well the wards might be ventilated.

7. Before I go further, I beg to refer to the plan of a marine hospital by one of the surgeons in the navy U. States. In this plan the patients are to be lodged in large wards 80 feet long, and 30 feet wide; 24 patients in each ward. The beds, therefore, will each of them stand in a space of six feet square; and the passage between their feet will be 18 feet wide: 24 beds will occupy 2400 superficial feet. If, therefore,



in the plan submitted to you by me, three wards containing 24 patients occupy only 1524 superficial feet, (including walls) it cannot, I believe, be supposed possible further to contract the space allotted to the patients, and of course to diminish the extent of the hospital, or lessen its expense. One of the greatest advantages attending the lodging of the patients in small numbers in separate wards is this: that those whose cases are of a nature to annoy such others as require repose, may be kept distinct from the latter; and in general, that the patients most requiring it, can be kept quiet. In hospitals in which many patients are lodged in one large ward, this distinction not only becomes impossible, but the ward itself becomes a thoroughfare for the whole business of the attendance of medical men, of nurses, and of servants. To avoid the latter great inconvenience, I have placed a general passage of communication along all the wards, 8 feet in width. This passage takes the place of all the large stalls and spaces necessary for communication on the other system, and prevents the necessity of passing through any ward without having business with the patients that are in it. It also is sufficiently wide to contain the tables, drawers, and other conveniences required by the nurses and surgeons, and for the preparations necessary to the administration of chirurgical or medical relief.

8. The next point of consideration, respects the ventilation of the wards. I have endeavoured to avoid the imperfect ventilation of wards arranged on each side of a long middle passage, and the inconvenience of the sun shining into single wards extending across the whole building, especially of such as front the east and west. I have to this end shaded the south side of the house by an open arcade, 10 feet wide, and have pro-

vided the north passage with a range of large windows. The wards themselves have two doors leading to the south arcade, the other to the north passage, and have 4 windows, one at each side of each range of beds. By opening all the windows and doors, the most perfect communication with the external air can be effected, which may be diminished at pleasure on either side.

9. The south arcade also serves for a walk, or a seat in the open air to such as can leave their beds; and to all convalescents.

10. One of the greatest difficulties in planning hospitals is to provide for the removal of the fæces; and other disagreeable matter. I have endeavoured to do this, by means of two smaller rooms, one in each floor, which I have called tub-rooms. Those who can go to these rooms, may find the accommodation of convenient vessels; those who are obliged to remain in their wards, must have vessels, to be emptied into a larger one in the tub-room. This latter is then, every morning very early, and late in the evening, or perhaps only once in the night, let down by a rope and pulley into a cart, and removed to the proper place in the yard, without annoyance to the house or neighbourhood. In the medical schools built by me in Philadelphia, a pit is connected with the dissecting-rooms, which most perfectly answers the purpose of keeping the house free from disagreeable smells, and of getting rid very conveniently of all noxious matter. The fear lest the springs of the hill (near Washington,) should be corrupted by such a pit, will probably forbid its use in the hospital.

11. The offices belonging essentially to a hospital are:

1. A kitchen.
2. A bake-house.
3. A provision cellar, and dry store-room.

4. A depository of the clothing belonging to patients.
5. A depository of hospital clothing and bedding.
6. A laboratory and dispensatory.
7. Warm and cold baths.
8. A receiving-room, in which the patient is examined, clothed, and prepared for the ward to which he is to belong.
9. Lodging rooms for the nurses and steward of the house.
10. Operation and dissecting rooms.

For the six first of these offices, there is a simple and permanent provision made in the basement story of the plan submitted to you. But for the three latter there can be no room spared, without either enlarging the building, or for the present converting the uses of the offices as follows :

1. The kitchen may also be the wash-house.
2. The wash-house may furnish the bath-room.
3. Both species of clothing may be contained in one room, and the second become a lodging-room for female servants and nurses.—Male servants may lodge in the passages of the communication.
4. The first ward must be converted into a receiving-room, and the twelfth into an operating room. But it is evident that two wards being thus lost, only 80 patients can be received into the house, unless more than eight be lodged in each ward.

12. I have explained generally, the principles on which the arrangement and extent of my plan have been determined. The next view that must be taken of it in point of expense, is the kind and quantity of material of which it is to be built.

Bricks are certainly the least expensive of the solid materials of this city.

If the foundations of the house are laid in quarry-stone, and the external walls carried up in the same materials as far as the surface : if the internal walls are built of bricks, or the external of quarry-stone, faced with free-stone as high as the water-table : and if the two upper stories (above the basement) be built entirely of brick, with free-stone fascias and window-selles ; and the basement story of the two tub-rooms be entirely vaulted in bricks, then the hospital will cost, according to the best estimate that can be made, \$ 25,426.

And if the whole of the north wall, forming in the whole design part of the north front, be faced with plain free-stone, without any decoration, so as to assume the appearance exhibited in the drawing ; then the hospital will cost \$ 28,000.

This estimate is made on a supposition that the external walls of the lower story are 1 foot 10 inches thick, and of the upper stories 1 foot 6 inches thick, the internal walls  $1\frac{1}{2}$  bricks thick ; and when it is considered that the external walls are 152 feet long, and 40 feet in height, without any connexion with the internal walls, it will not be thought practicable or safe to diminish the strength I have given to them.

13. The plan, or part of the plan, to which the above observations apply, includes only the building appropriated to lodging the patients.

At the west corner of this building is proposed to be the house or dwelling of the steward. It contains two rooms and four chambers for a family, with the necessary kitchen, offices, and a library, or consulting-room, for the medical officers. The largest of the chambers may be made to communicate with the upper passage of the hospital, and furnish a museum or dispensary until the plan shall be enlarged.

This building will cost, if built of brick, as proposed  
for the hospital in the first estimate,       \$ 8,750

If faced with free-stone,       -       -       -       10,260

14. The estimates therefore would stand thus :

Faced with brick: hospital,       -       -       25,500

Officers' house, &c.       -       -       8,750

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\$ 34,250

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Do. with free-stone: hospital,       -       28,000

Officers' house,       -       10,250

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\$ 38,250

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Should the plan submitted contain an arrangement approved by you in its general principles, but appear liable to correction and alteration in part; the same principles may be applied to an infinite variety of arrangement: and I will only remark, that in any such arrangement, the following points must be observed.

1. That the building must front north and south, i. e. that its greatest length must be from east to west.

2. That the north wall of the sick wards, should not be exposed to the weather—it being a correct observation, that in wards of which the north walls are thus exposed, the greatest number of deaths occur on the north side; but that in hospitals in which there are wards on each side of a middle passage, the north side of the south wards exhibits no difference of deaths from the south side. This naturally arises from the chilliness of the atmosphere of a wall exposed to the N. W. and N. E. winds and rains.

15. The estimates submitted above, are exclusive of the fencing, planting, and laying out of the ground, and of single buildings, sheds, gates, or other access-



ries. To estimate these, the site of the buildings must be known.

Holding myself in readiness to explain or give any information which may be required,

I am, very respectfully,

Your obedient humble servant,

B. HENRY LATROBE, *Eng. N. D.*

The Honorable the Secretary of the Navy of the United States.

Washington, July 3, 1812.

(Private.)

SIR,

It was my duty, agreeably to your suggestion on Thursday last, to examine into the practicability of executing the work of the hospital, by the workmen or the means now collected in the navy-yard.

I was always of opinion, that the best and cheapest method of executing publick works, is *under well-paid foremen*, by the day; and the very worst, by contract. Journeymen will do their duty for the publick as well as for individuals; and when the *time* of the men, and the *profit* of the master, mean the same thing, as in all works executed by contract they do, work will be rapidly done, or done by a few hands, and those at the lowest wages; provided it is only turned out in such a manner as barely to authorize the payment of the account.

I have therefore always recommended the former method, and hitherto successfully. In what manner my works are executed, you can judge; and they cost *all of them* at least 25 per cent. less than the measure or value price. It is only necessary to compare the cost of the N. and of the S. wing of the capitol, to ascertain this fact.

I would warmly recommend, therefore, that all the wood-work, glazing, and painting, be done by the workmen of the yard. All the timber, much of which may be that which is unsound, but unfit for naval use, may be saved at the rate of the actual expense of the saw-mill; all the framing and joiner's work executed in the joiner's shop; all the ironmongery procured by the store-keeper; and the glass cut and put in by the glazier; and the painting executed 200 per cent. cheaper than can be done out of doors.

The brick-work may indeed be executed by contract; and there are many men who would perform it very faithfully at \$12 50 per thousand. But, without costing more, it would be better done under a foreman at \$2 50 per day. The stone-work must necessarily be done by measurement. The publick, however, should buy the stone of the quarry-men. It would cost 7 dols. per ton.

I have called this a private letter, chiefly to distinguish it from my report, which is of a publick nature; and also because there are many very excellent mechanics, and respectable men, who would be disappointed, should the course which is suggested be adopted, and with whom I do wish to take upon myself the responsibility of their recommendation.

The estimate I have submitted for the whole building approaches 40,000 dols. I am fully convinced from experience, that the publick would save \$8,000, by following the plan pursued at the capitol, and at all my publick works—that of *days' work*, under foremen, and in this instance under those of the yard. I will add, that having had occasion to measure the bank of Pennsylvania, I found it to have cost less by \$32,000 than the measure and value price.

I am, very respectfully, your's,

B. HENRY LATROBE, *Eng. N. D. U. S.*

## SECTION XXXII.

*An Account of the Pennsylvania Hospital, and its internal police.*

It is obvious, that in proposing regulations and arrangements for the internal administration of hospitals, whether naval, military, or civil; or in suggesting plans for the structure of wards and other domestick contrivances, but little can be offered that is new. In both cases, the best we can do, is to take a view of some of the similar institutions in highest repute, and cull from their various and well devised plans, such as are most useful and consistent with the principles of economy and neatness.

With this view, I deem it far from irrelevant to the object of this work, to present some account of an institution, with the internal police of which I have long been familiarized; and which I believe, from a comparative view with the first hospitals of England, to be one of the best conducted institutions of the kind, perhaps in any country. The hospitals of London are, it is true, conducted on a much more extensive plan: St. Thomas', Guy's, and St. Bartholomew's, being perhaps twice as large as the one of which I am speaking—the Pennsylvania hospital. But I think I can with truth assert: that the regularity, neatness, and regard to comfort, which characterize this noble institution, eminently entitles it to a preference to any of these, at least so far as it goes. The architectural plan of the building: its beautiful and healthy situation, surrounded as it is by a constant current of fresh air, unimpeded by any buildings, or other hindrances: render this institution one of the most salubrious re-

sorts for the sick or afflicted, that could possibly be contrived in the midst of a large and populous city.

The hospital presents a south front; the wings which intersect the long buildings that join them to the main edifice, at right angles: present the one an east, and the other a west front. The centre building, or main edifice, is sixty-four feet in front, elevated above all the adjoining buildings, (being three stories high,) and projecting beyond them both front and back. On the summit of the roof is a sky-light, forming the apex of the operating theatre, which receives its light entirely from this. Two large stair-cases, leading to the several wards and apartments up-stairs, are constructed in this building, running from the main hall.

Adjoining this centre edifice on the east, is a building 80 feet front, and 27 feet deep, two stories high from the surface of the ground, and three, including the range of windows in the area below. This building is divided in its upper stories, into two wards, extending nearly to its entire length and breadth; and the lower or basement story, is subdivided into a row of cells on the south side, and a lobby on the north. The two long wards are ventilated by openings into the chimnies, of which there are four in each ward, near the ceiling. At the east end of these wards, two small apartments are partitioned off, about 10 feet square, the one intended for a pantry, and the other for a lodging-room for the assistant-nurses of the ward. At the other, or west termination of the upper ward, two small rooms of the same size are partitioned off, for patients who may require a separate room. The lower ward extends in length to the centre building.

Intersecting this long building at right angles, and adjoining it, facing the east, is a wing two stories high, running north and south, extending in length 110 feet.

The square ground plot on which the hospital stands, is 396 feet in width, and 468 feet in length, containing about four acres. It is enclosed by a brick wall, with an iron palisade in its front. It is surrounded by fine rows of lofty sycamore trees, and the grounds are well laid out in a beautiful garden behind, and grass plots and hedges in front. There is a vacant square to the east, and half a square on the west, making together above six acres. These squares lay across Eighth-street on the east, and Ninth-street on the west, parallel to the lines of the hospital-enclosure. Besides these, there are three vacant squares on the south side of Pine-street, opposite the hospital, which belong to this institution; so that every benefit that arises from airiness of situation, is insured to this hospital. The other half square on the west, belongs to the Alms-House, and it is intended to be kept open; so that the Pennsylvania hospital may be said to stand in the middle of several great squares, which, without including the open streets, contain more than thirteen acres.

This institution was founded by the contributors in the year 1752, for the relief of lunaticks, and the sick-poor of Pennsylvania. These contributors are such persons as have paid into the hospital fund the sum of 10 pounds, or upwards. "They have perpetual succession, with the power to elect twelve managers, a treasurer, and all other officers of the institution, and to make rules and regulations for the government of the household. They may receive and take the lands, hereditaments, and tenements, not exceeding the yearly value of one thousand pounds, of the gift, alienation, bequest, or devise, of any person or persons whomsoever, and of any goods and chattels whatsoever: Provided, that no general meeting of the contributors, or persons acting under them, shall employ



Near the west wall are two buildings, two stories high, the one containing washing, ironing, and drying rooms; the other stables, &c.

The different apartments in this hospital are as follow :

*Centre Building.*

Kitchen, scullery, steward's dining-room, maids' lodging-room, in the basement story, -	4
A library-room, on the first floor,	4
An apothecary's shop, ditto,	
Manager's room, ditto,	
Steward's room, ditto, -	
The contributor's room, in the second story, - -	3
Chambers for the resident physician, pupils, and steward, ditto,	
Operation-room, in the third story,	4
Museum, ditto, - -	
Small apartments near the operation-room, for the patients operated on, ditto, - -	
Baking-rooms and larders in the cellar, - - - -	3
Bathing-rooms in the basement story of the west wing, -	2
Room for deputy-steward and his wife, in ditto, - -	1
Cells for lunatics in the west wing,	70
Ditto, in the east, - -	16
For sick and wounded in the whole building,	23 wards.
In all, wards and rooms,	130

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any money or other estate, expressly given to the capital stock of the hospital, in any other way than by applying its annual interest or rent toward the entertainment and care of the sick and distempered poor, that shall from time to time be brought and placed therein, for the cure of their diseases, from any part of the state, without partiality or preference."

The contributors have vested the managers with the authority to establish the mode of admitting and discharging patients, and the terms upon which they are to continue in the hospital; also to elect the medical and other officers of the institution.

They admit as many other poor patients (after the established number of paupers supported by the capital stock are admitted) as they can agree to take upon reasonable rates. The fund arising from the profits of the board and nursing of such patients, is appropriated to the same uses as the interest money of the publick stock. The overseers of the poor of Pennsylvania, and its religious societies, pay three dollars per week for each patient. Those of other states pay four dollars; private patients, residents of Pennsylvania, from three and an half to six dollars; those of other states from four and an half to eight dollars.

The anatomical museum contains a collection of dried preparations—castings in plaister of Paris of the gravid uterus—two wax models of the human body—pictures representing the blood-vessels, the fœtus in utero, &c. &c. in crayons, the gift of Dr. John Fothergill, of London; together with many valuable preparations in spirits. Every stranger or visitor pays one dollar for admission into this museum. Students who have taken a ticket to attend the practice of the house, are however admitted without any extra charge.

The medical library consists of about 3000 volumes of well chosen books.

The library and museum are supported and enlarged by the fund accruing from the money paid by students to attend the hospital, which is 10 dollars per annum each. This fund amounts to a yearly income of above two thousand dollars, the number of students who take tickets being usually between two and three hundred.

The managers, the physicians, the surgeons and the contributors, serve the institution gratuitously. Persons however who are able to do it, are at liberty to remunerate the attending physicians and surgeons, as they would in private houses.

Every private patient has the liberty of choosing any one of the physicians of the hospital to attend him whom he prefers.

The amputation of a limb cannot be performed without a consultation and agreement of the three surgeons of the house; and in no case without the consent of the patient.

No medical man can be elected a physician or surgeon of the hospital, who is under twenty-seven years of age.

The sitting managers meet on Wednesday and Saturday mornings of every week, to admit and discharge patients.

Between these periods the patient desiring admittance, must apply to the attending physician or surgeon, and obtain his certificate that he is a proper subject for admission. This is carried to one of the sitting managers, who takes the usual security, and orders his admission.

Overseers from the country, who bring a patient for admission, are obliged to have a certificate signed by two magistrates, signifying that they are in office, and that the pauper belongs to their district.

Persons with infectious diseases are not admitted. Incurables are not admitted, except lunaticks. All cases of sudden accident are admitted without form or charge, if brought within 24 hours after they have happened.

The capital stock of this hospital amounts to 124,854 dollars. The real estate consists of vacant lots surrounding the hospital area, &c. &c.

These vacant lots are most unjustly and illiberally made subject to a city as well as a county tax, which amount to about 1200 dollars per ann. They ought, according to every principle of humanity, liberality, justice and charity, to be exempted from these most ill-judged contributions. This sum would go far towards supporting an additional number of paupers.

The officers of the institution are as follow :

12 Managers, who serve gratis.	
3 Physicians, who also give their attendance gratis.	
3 Surgeons,	ditto.
A physician to the lying-in department,	ditto.
A physician to the out-patients	\$300 per ann.
A resident physician, who serves gratis.	
A dresser, and an apothecary, (pupils of the house, who serve 5 years)	ditto.
A steward, and a matron,	600
Deputy-steward, or superintendant of the west-building, and deputy matron of the same,	350
A gardener,	216
An assistant do.	144
Four cell-keepers,	144 each.
A carter,	144
A labourer,	144
A watchman,	144



A baker, . . . . .	\$ 144 per ann.
A porter, . . . . .	96
Four nurses, each \$ 1 33 per week,	276 64
Five assistant do. each \$ 1 25 per week,	325
Cook, \$ 1 30 per week, . . .	69 16
Four chambermaids, each \$ 1 25 per week, . . . . .	320
Three laundresses, hired 5 or 6 days in each week, at 62½ cents per day,	487 50
A sufficient number of women are hired every spring, to whitewash and tho- roughly clean every part of the house. Their wages and materials employed amount to . . . . .	
	167 50

The resident physician, the dresser, the apothecary, the steward, and all other officers who reside in the house, are furnished with a table.

The taxes upon the vacant lots, just mentioned, are now (January, 1817) remitted, by a law of the State Legislature, passed during the session of 1815-16,

## SECTION XXIII.

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*OBSERVATIONS ON***MILITARY AND FLYING HOSPITALS.**

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ALL hospitals, connected with the publick service, particularly during time of war, are calculated for the reception of the same class of men: Hospitals for sailors and hospitals for soldiers, are therefore one and the same thing. The same necessity for subordination exists in both. The same kind of wounds and diseases are found in both; and the same dispositions are found to pervade the ranks of the line as are found to characterise the crews of ships.

Whatever general regulations I have proposed for the government of Marine Hospitals, and all the minute internal details of arrangement, will be found perfectly adequate to the organization of large permanent Military Hospitals.

But, in time of war, it becomes necessary to establish hospitals of a minor description, in the vicinity of armies and militia cantonments; and as the sick and wounded are always hindrances to the quick and efficient operations of acting forces, it is expedient that they be removed from them. In this case, it becomes requisite to organize a kind of temporary sick quarters, which, from

the circumstance of their being appended to, and moving with the armies during a campaign, are denominated Flying Hospitals.

With respect to the first of these two last named establishments, it is only necessary to remark, that a healthful exposure and convenient spot should be fixed on, for their erection; and when made of boards, should be well covered with whitewash both in and outside.— Though much regularity or neatness is not attainable in such temporary establishments, yet every regard should be paid to cleanliness and convenience compatible with the disadvantages of local situation. I cannot help in this place, noticing a plan suggested by the late physician and surgeon-general of the army of the United States. It is at least perfectly novel. He proposed that military hospitals should be built one story in height with round logs, having a fire-place or hearth, in the centre, without a chimney. The smoke was to be carried off through an inverted wooden funnel, affixed to an opening in the roof. The floors of these rooms to be of earth. It appears that this gentleman supposed that hospitals of this description would prevent the propagation of diseases which have their origin in impure air, and which arise sometimes from the crowded wards of an hospital! It seems the doctor supposed, that while wooden floors readily absorbed the matter or effluvia of infection or contagion, those of earth would neutralize infectious principles! I do not think any plan was ever conceived, so fraught with mischief as this; and it certainly does not reflect either credit upon the inventor's ingenuity or discernment. Wooden floors kept clean and covered plentifully with sand, are perfect-

ly safe. I believe, notwithstanding the elevated rank of Dr. Tilton during the war, his plan was never adopted by a single surgeon.

Flying Hospitals should be always ready to receive sick and wounded soldiers. They should accordingly be furnished with a requisite number of medical officers of reputation and ability, and a sufficient number of attendants. These attendants should be enlisted for the purpose—for when they are supplied by details from the line, they are utterly worthless. Large tents, capable of accommodating 20 patients, make good hospitals of this kind. Barns, or other convenient out-houses, also answer the purpose very well, where they can be got within a suitable distance. During the summer months, perhaps tents are preferable. After the dews fall in autumn, the other buildings are safest.

Hospital encampments should be made on level and dry ground, and if gravelly so much the better. Drains should be made on either side, to carry off the rain.—The tents should occasionally be struck and pitched on new ground. It is recommended to let them stand but two weeks on the same spot.

Privies should be dug at proper distances from the encampment, and if rivulets are in the vicinity, they may be made use of instead.

Kitchens must be constructed of logs, stones, and mud—in the form of a large chimney place, covered with boughs and stems of trees.

Flying hospitals should be furnished with plenty of bed sacks, with loop holes at the corners that can be stretched on forks driven in the ground. These are portable, and answer better than bunks. All such encampments

should be furnished with a team and horses, and not rendered dependent on the quarter-master's department for one, when a removal of the army is ordered.

The reader is referred to Larrey's work for much information on these points.





PART SECOND.

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A SCHEME

FOR

AMENDING AND SYSTEMATIZING

THE

MEDICAL DEPARTMENT

OF THE

NAVY OF THE UNITED STATES.

WITH

A FEW OBSERVATIONS ON THE EXPEDIENCY OF ALTERING  
THE PRESENT RATION; AND PROMOTING THE BETTER  
VENTILATION AND WARMING OF SHIPS.

ALSO,

SOME STRICTURES ON THE PRACTICE OF FRE-  
QUENTLY WET-SCRUBBING THE DECKS  
IN THE WINTER SEASON;

AND THE IMPROPRIETY OF SHIPPING MEN FOR THE UNITED STATES'  
VESSELS, WITHOUT A STRICT AND CONSCIENTIOUS EXAMINA-  
TION BY A SURGEON OR SURGEON'S MATE, OF THEIR  
EFFICIENCY AS ABLE-BODIED MEN.

# THE HISTORY OF THE

REIGN OF

CHARLES THE FIRST

BY JOHN BURNET

IN TWO VOLUMES.

LONDON, Printed by J. Streater, at the Sign of the Gun, in St. Dunstons Church-yard, 1679.

THE SECOND VOLUME.

IN TWO VOLUMES.

THE FIRST PART.

THE SECOND PART.

THE THIRD PART.

THE FOURTH PART.

THE FIFTH PART.

## PART SECOND.

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### SECTION I.

#### *INTRODUCTION.*

THE following pages contain some miscellaneous observations on the medical department of the navy. I have attempted to devise a more systematick plan for conducting it—and have ventured to propose a scheme for checking the abuses which grow out of its present loose administration. The motives that induced me to notice this subject are these : Having entered the navy as a surgeon when very young, and having been ordered to one of the largest ships\* belonging to it, with a complement of 430 men, stationed in a warm and variable climate—I soon found myself not a little embarrassed by the perplexities which I daily met with in my practice on board. The unhealthiness of the climate, operating upon a variety of different constitutions in an entirely new crew ; the change of diet and mode of life ; the necessary and unavoidable exposure of boats' crews to the fervid rays of a vertical sun, as well as to the damp and heavy dews of night, and at all times to the insalubrious exhalations of the surrounding marshy country—all combined to generate such perpetual sickness, that the frigate might almost have been called a hospital-ship. The average number on the daily sick-list, was about

\* The frigate United States.

40. In this situation, on board of a ship just refitted, commissioned, and equipped, I found myself without half the comforts and necessities for the sick that the hospital department should have been supplied with; yet this department had been reported as replenished with every requisite article for a cruise of two years, and together with the medicine chest had cost the government fifteen hundred dollars. There were neither beds for the sick, sheets, pillows, pillowcases, nor night-caps—nor was there a sufficiency of wine, brandy, chocolate, or sugar; and that portion of these articles which the store-room contained, was neither pure nor fit for sick men. The medicine chest was overloaded with the useful, and choked up with many useless and damaged articles.—Such was the state of the medical department of this ship! Upon a representation of it however to her commander, Com. Decatur, he allowed me all the necessities I stood in need of, and thus enabled me to administer those comforts to my patients, which they so much required. What would have been my situation, had the ship immediately proceeded to sea, for a cruise of eight or ten months, upon my joining her, and before I had an opportunity of examining into the condition of the medicine and store chests—which might have been the case, these having been reported as sufficiently furnished? What the consequence would have been must be obvious! The other ships were not better furnished than the one of which I am speaking—and I perpetually heard of complaints on this score.

What was the cause of these abuses? I answer—the want of an organised board of medical commissioners, whose peculiar province it should be, to order the pro-



per proportions and quantities of medicine, comforts, and necessaries, for the publick ships, and who should have no interest, directly or indirectly, individually or collectively—in the furnishing of articles thus ordered.

As I was at that time a novice in the routine of ship duty, and having but recently left the Pennsylvania Hospital, an institution in which order, system, and punctuality, render the practice of medicine a pleasure, I was overwhelmed with the difficulties I had to encounter in the performance of professional duties, where every inconvenience and disadvantage that can be imagined was opposed to the exertions of the medical officer. My feelings revolted from the idea of continuing in such a distressing situation—and I became disgusted with the unavailing toil attendant upon ship-practice. I communicated my sentiments on this subject unreservedly to my lamented friend, the late Captain WILLIAM HENRY ALLEN\*, then first lieutenant of the ship. I ventured even at that early period of my naval service, to condemn the flagrant irregularities and abuses, that I could not but believe existed to a ruinous extent. In my conver-

\* This gallant officer and accomplished gentleman, died at Mill-Prison Hospital, Plymouth (England), in the twenty-ninth year of his age, of a wound received in the action between his vessel, the *Argus*, and the British brig *Pelican*, of superior force. In him were united the valour of a hero, the virtues of a philanthropist, and the polished mind and manners of a gentleman. He inherited from nature a person elegant and commanding, rendered still more engaging by a happy union of manliness with the *graces*. He was eminently remarkable for three things: his devotedness to his profession—the constancy and faithfulness of his attachments—and the sensibility and refinement of his mind. His urbanity, his disinterestedness, conspicuous in every action; his noble generosity, caused him to be beloved by many,—but by none more ardently than the friend who now offers this feeble, but *heart felt* tribute to his memory.

sations with him I often declared, that if such was always the deplorable condition of sick men on ship-board, I wished not longer to be their medical attendant; since my feelings were pained every moment in the day by contemplating afflictions I was unable to relieve, for the mere want of comforts so easily procured on shore. He encouraged me, however, to persevere, and at the same time that he lamented with me the want of a superintending medical board, he tendered an offer of his assistance in making any arrangements compatible with the internal economy of the ship, that I might deem calculated to meliorate the condition of the sick. I soon found that their situation was susceptible of much relief, even on ship-board—and I was not long concluding, that if proper steps were taken to furnish the ships with sick-necessaries of a proper kind, the practice of medicine and surgery in the navy, could be rendered more beneficial to the sick, and consequently less offensive to the humane feelings of the medical officer. I never lost sight of the opinion I had conceived, that the errors of the medical department of the navy might be easily corrected, and its abuses abolished.

In the following pages I have made an attempt to introduce a systematick plan for furnishing the ships and vessels of the United States, with such articles and stores as the hospital department requires. I have also made an effort to abolish the present irregular manner in which our medicine and store-chests are replenished, by the requisition of the surgeon—and to establish such regulations respecting his responsibility for the just appropriation of the medicine and comforts, as I deem likely to result, if put into rigid execution, in the benefit of

the service. The good effects of this plan will not only be perceived in the actual cost of the requisite articles, but will be evidenced in the diminished amount of the bills that come under the inspection of the accountant. When it is necessary to replenish the medical and hospital storerooms of our ships, at a short notice, in some of our inconsiderable sea-port towns, where perhaps but a single druggist's shop is to be found—it is in the power of the apothecary to practice any exorbitancy or even extortion he pleases, and the surgeon has to choose between the alternatives of signing the bills containing unjust charges, or of putting to sea, perhaps for a cruise, or long voyage, without the articles he stands in absolute need of. This has happened to me, and, I doubt not, to many other surgeons in the service.

In an attempt to amend and systematize the medical department of the navy, it may be proper to state briefly, the chief points that require correction or reform.

The principal objects that demand our attention, and that are susceptible of emendation, are: 1st. The introduction of the lemon acid, in abundant quantities, into free and liberal use in our ships. 2d. The present irregular mode of supplying the ships and vessels of war with medicine and hospital stores. 3d. The laxity in the necessary checks to abuses that grow from it. 4th. The faultiness of the regulations respecting the responsibility of the surgeon for the safe-keeping and proper appropriation of the articles intrusted to his charge, exclusively for the benefit of the sick. 5th. The alteration of the present ration, or at least the liquid part of it\*. 6th.

\* This subject, I conceive, comes properly under the cognizance of the surgeon, since its defects or imperfections have so material an influence

The better ventilation and warming of our ships in the winter season. 7th. The practice of wet-scrubbing the decks in cold and damp weather; and lastly, the impropriety, and pernicious consequences to the service, of the present plan of recruiting:—in which men are shipped without a strict examination by a professional man. I shall also add some few observations on the structure of that part of a vessel connected with the surgeon's department, and some miscellaneous remarks on the internal government of ships, &c. It is my intention to consider these points in the order I have mentioned them.

Many of the regulations which I have proposed, are closely connected with the business of the accountant of the navy department. Those particularly, requiring surgeons to verify their expenditure returns by oath, and those which are intended to diminish the exorbitancy of charges that are frequently made by druggists for surgeons' necessaries, relate to his office. The mode by which I have proposed to accomplish this end, is by establishing a systematick plan of furnishing and replenishing the medical department, which will admit of regular prices, subject only to variation from the rise and fall in the market, of the articles in wholesale quantities.

I cannot in this place silently pass over, without noticing the consequences of it—the violation of that principle which is the life of naval and military service—I mean that which enforces the *observance of SENIORITY in the advancement of officers of whatever grade*. The infringement of this principle demands the united efforts

upon the health of the crews of ships. In a prophylactick point of view, then, at least, it may be said to appertain to the medical department.



of the officers of the navy, to discountenance and abolish it. It is not only unjust in itself, but destructive of the honourable pride and comfort of officers, and eminently subversive of that harmony, order, and subordination, which constitute the very existence of a well regulated navy. Merit and service should never be neglected or forgotten. When appointments are founded on injustice, or made under the influence of *favour*: they *must*, in the nature of things, be no less destructive of the individual happiness of officers, than inimical to the contentment of the men.

It has ever been remarked, that premature and unjust preferments, especially in the naval service, engender animosities, which sooner or later ripen into insubordination. The transition from this unruly evidence of discontentment to *mutiny*, is very frequent and natural.—Can it be otherwise? The promotion of junior, over the heads of senior officers; or the advancement to situations of honour and profit, of officers who have recently entered the service, in preference to those who have devoted their youth, their labour, and perhaps their health, to the faithful service of their country—can only be calculated to dispirit the exertions, not only of those who have been thus forgotten, but of those who may expect to share a similar fate. Besides thus depressing the laudable ambition of officers, the practice is invidious; since, to those unacquainted with the abuses of the service, and the latitude that is given to create improper distinctions, it always implies that the officer advanced is eminently entitled to his preferment, while he who is neglected, though senior in rank, is *undeserving* of reward or honour.



These observations, though true as respects the navy generally, are more particularly applicable to the officers of that department which is most defectively organized. I well know, that many of the surgeons of the service *feel* the truth of what I have advanced. Let them make some effort to subvert this ruinous system. When this is done, then will service be honourable, be desirable.

With a sincere hope that the exertions of the surgeons of the navy, to benefit the service ; and the conscientious and faithful performance of their duties : may meet with a kinder return than that which greeted mine—I submit the following pages particularly to their attention. If I have treated the subject to *their* satisfaction, I shall feel highly gratified.

I have been necessarily led into the exposition of many and palpable abuses in the medical department of the navy. There are not a few persons with whose interests such an exposition will very much interfere. From *them*, therefore, I expect *no thanks*. On the contrary, I look for cavilling and censure at their hands. I, however, am prepared to meet it. My independence in expressing my sentiments on points of duty, in the navy, procured for me not a few enemies. But while I regret this consequence of a line of conduct that thrice the inconvenience could not have made me forego, I have the consoling assurance of having acquitted myself in the discharge of my duties to the entire satisfaction of those of the officers with whom I have served, whose regard and good opinion were of any moment in my estimation.

Both my feelings and my fortune have suffered by a determination made when I first entered the service, from the execution of which I never in a single instance

swerved—to pursue that line of conduct that I deemed consistent with the faithful performance of my duty and my trust, however such conduct might clash with the private or publick interests of others, or differ from the customary proceedings of persons similarly situated with myself.

The same independence which caused me to hold up my hands against the abuses of the medical department of the navy, emboldens me to expose them.

I conceive that the country has a right to expect from every officer in its service, the result of his experience, if that can in any way lead to the interests of the nation. I therefore tender, with very unaffected diffidence, my mite towards its general weal. I shall first offer some observations on the subject with a view to invite the attention of the officers of the navy generally, to the necessity of the changes I have proposed.

I need hardly remind them, that any schemes suggested by an individual to the secretary of the navy, are not likely to be well received, unless they be seconded by officers high in rank and reputation. Such schemes are generally denominated *innovations*, and are looked upon with a very jealous eye, if not with total disapprobation. To those officers, therefore, who stand at the head of the navy, and whose long and faithful service, justly entitles them to extensive influence in all its departments, I cannot think I shall apply in vain, for their co-operative influence in accomplishing my design.—With some of these officers I have frequently conversed respecting the deplorable want of system that marks the medical department of the navy. It affords me the greatest satisfaction to say: that I ever found them willing to give all assistance in their power, in establishing

any regulations calculated to meliorate the condition of the seamen under their command.

It is highly necessary that these officers, as well as others in the navy of any influence, should give what assistance they may be able to afford, to those who show any willingness to correct abuses.

For my own part, I repeat, from many I expect no thanks for what I have done. The schemes I have proposed interfere too manifestly with the private interests of some persons connected with the navy, to please them. Yet, anticipating their displeasure, it will neither surprise nor distress me. I have written this work with a proud consciousness of having faithfully performed my duty in every situation I have filled, to the extent of my abilities—but I have done more: I have made an exposition of the multifarious abuses with which every surgeon in the service, disposed to be correct, has to contend. As the irregular direction of the medical department, was a perpetual source of embarrassment to me, so the reform of it may smooth the path of duty for others. I scruple not to say, that these abuses embittered every hour of my naval servitude. Whenever I resisted what I deemed oppression or interference with my duty, which I not unfrequently had occasion to do: my independence was rewarded, as may be supposed, by personal dislike and the displeasure of those whose influence could materially affect my interests. Yet I was never deterred by the fear of this, from the uniform line of conduct I always pursued, viz. acting in obedience to my sense of duty, in opposition to established irregularities and aberrations, regardless of the consequences to my own fate.

## SECTION II.

*Of the introduction of the Lemon-Acid into the Navy.*

Among the important additions that may be made to the medical department, is the introduction of the clarified juice of lemons, in liberal quantities.

The prevalence of scurvy among sailors is ever disastrous and terrifick in its consequences. As it is a disease peculiarly incidental to, if not inseparable from the sea-faring life, it becomes the duty of every surgeon of a ship, and every commander, to promote the use of such prophylacticks as experience has entitled to a preference. Though this disease does undoubtedly sometimes make its appearance in ships, garrisons, &c. where the men have not been confined to a diet of salted meat alone, but have been abundantly supplied with fresh beef, greens, and other esculent vegetables and roots: yet there cannot be a doubt that it generally arises from a long subsistence upon salt-junk, assisted in its pernicious effects upon the system by unavoidable exposure to cold and dampness. The most effectual remedies for this disease are acids. Of these, the juice of lemons or limes is to be preferred. Every ship should therefore be furnished with such quantities of this article as may be sufficient to meet the probable wants of the crew.

In the following letter, which was addressed to the late secretary of the navy, two years ago, the benefit of this acid is fully considered. I would here remark, that as the object of it still remains to be accomplished, I hope the present effort will be more successful than the first:

SIR,

From the interest I feel in the welfare of the navy, the augmentation of which I anticipate as no improba-



ble occurrence before the lapse of many years, I have been induced to address you, on one of those points contributive to the health of seamen, which elicit the attention of the surgeon.

The British naval annals, and the history of their military campaigns, as well as the accounts of the operations of the armies of France, Russia, Spain, Portugal, &c. and the relations of their naval expeditions—afford innumerable instances of the dreadful waste of life, produced by the ravages of disease among sailors and soldiers, which at times has been more fatal than the sword itself.

These narrations are replete with accounts of the injuries resulting from this cause to the national contests in which the naval and land forces have been engaged. Need I do more than cite two memorable instances to attest the truth of this position?—the failure of the famous English expedition, many years ago, under the command and conduction of admiral Knowles, against Carthagera, on the Spanish Maine; and the more recent, but to the English nation not less disastrous expedition under the command of lord Chatham to the Scheld.—The mortality in the first attempt, from a variety of diseases, but principally the scurvy; and in the second, from the terrific ravages of the fever of Walcheren, which would have frustrated the designs of the best concerted expeditions—impress us with a lively sense of the necessity of such regulations for the health of seamen and soldiers in our naval and land forces, as will be most likely to preserve them from the devastation of those diseases incidental to their peculiar mode of life and occupation. With respect to the navy, which is my object at present, the regulations that are most to be depended on, for preserving and promoting the health of sea-



men, are such as have in view a diet of healthful quality, the personal cleanliness of the crews, and the purity and free ventilation of the ships they inhabit.

It is not my intention at this time to enter into the consideration of these different subjects, but to confine myself to a few observations on an article possessing important medicinal virtues, and capable of being made into one of the most wholesome and agreeable *diet-drinks* that can be made on board of ships, viz.—*the clarified juice of lemons*.

The mode of procuring this article from the fruit is extremely simple. The juice is expressed from the lemons, clarified, and a certain portion of rectified spirits of wine added to it, to keep it from fermentation and spoiling.

Its virtue depends upon the citrick acid, which the juice contains in great abundance; and this acid possesses considerable anti-scorbutick properties, as has been well ascertained.

The late introduction of the liberal use of lemon-juice into the British navy, has been proved by experience to be a regulation of great salutariness and importance. It is afforded in abundant quantities to all the vessels in his Britannick majesty's service, for the use of the hospital department.

The great benefit resulting from the free use of this article, is spoken of by the English surgeons in terms of the highest commendation. I have been informed by some of them, that during the summer season, it is frequently served out from the purser's department, with consent of the men, in ships stationed in warm climates, in lieu of some other article of the established ration, which can be advantageously dispensed with. They mix it with water, and sweeten it with molasses, and thus make an agreeable, cooling, and

wholesome drink. Sometimes they add a small portion of spirit to it, and convert it into a palatable punch, much less injurious than the rum or whiskey and water, known by the name of grog.

The effect of this acid in preventing and curing scurvy, is well ascertained. During the siege of Gibraltar, in February, 1780, the British garrison, which was reduced to great straits, were obliged to live a considerable time on salted provision, without the use of fresh vegetables. In consequence of this, the scurvy made its appearance among the troops of the garrison, and raged in so alarming a manner, as to threaten the most fatal consequences. At this time, the captain of a Danish dogger from Malaga, laden with lemons and oranges, afforded a cure for the disease. The cargo was purchased by the governour for the use of the garrison; and the free use of these fruits, which were liberally distributed among the troops, soon put a check to this terrifick malady. Captain Drinkwater, in his account of this siege, thus mentions the circumstance:—"At this time the scurvy had made dreadful ravages in our hospitals, and more were daily confined; many, however, unwilling to yield to its first attacks, persevered in their duty, to the more advanced stages. It was therefore not uncommon at this period, to see men, who, some months before, were hale, and capable of enduring any fatigue, supporting themselves to their post upon crutches, and even with that assistance scarcely able to move along. The most fatal consequences, in short, were to be apprehended to the garrison, when this Dane was happily directed to our relief." This scurvy is said by Mr. Cairncross, an eminent surgeon, who was present at the siege, to have "differed in no respect from the disease usually contracted by sailors in long sea-voyages; and of which

the immediate cause seemed to be the subsisting for a length of time upon salted provisions only, without a sufficient quantity of vegetables or other ascenscent foods. The circumstance related in the voyage of that celebrated circumnavigator, lord Anson, of consolidated fractures disuniting, and the callosity of the bone being perfectly dissolved. occurred frequently in our hospitals ; and old sores and wounds opened anew from the nature of the disorder. Various anti-scorbuticks were used without success, such as acid of vitriol, sour-cROUT, extract of malt, essence of spruce, &c. ; but the only specificks were fresh lemons and oranges, given liberally ; or, when they could not be procured, the preserved juice in such quantities, from one to four ounces per day, as the patient could bear. Whilst the lemons were found, from one to three were administered each day, as circumstances directed. The juice given to those in the most malignant state, was sometimes diluted with sugar, wine, or spirits ; but the convalescents took it without dilution. Women and children were equally affected, nor were the officers exempted from this dreadful disorder. It became almost general at the commencement of the winter season, owing to the cold and moisture ; and in the middle of the spring, when vegetables were scarce. The juice was preserved by adding to sixty gallons of the expressed liquor about five or ten gallons of brandy, which kept it in so wholesome a state, that several casks were opened in good condition at the close of the siege. The old juice, however, was not so speedily efficacious as the fruit, though by persevering longer in its use, it seldom failed."

When lord Anson sailed round the world, his men were severely afflicted with the scurvy. At the island of Tinian he found an abundance of oranges, and

from an indulgence in the free use of them, the scurvy-patients all recovered. In consequence of the report made by the commodore on his return to England, of the good effect of this fruit on his men, it was deemed worthy the attention of government to inquire into its anti-scorbutick virtue. Accordingly captain Cook, in his last voyage, was supplied with large quantilies of lemon and orange juices, inspissated to a rob;—he, however, was not very loud in his praises of the efficacy of the acid. He objected to its dearness, and thought its good effect depended much on its conjunction with other things. Sir John Pringle, in his discourse before the Royal Society, was of a different opinion from capt. Cook on this subject. He thought these fruits exceedingly efficacious in the sea-scurvy. He prefers the juices depurated, to the extract of them, because this last cannot be prepared without dissipating many of the finer parts.

Dr. John Gray, one of the physicians of the royal naval hospital at Haslar, informed me, that, during the four years he was physician of the English fleet in the Mediterranean, there fell under his observation scarcely a single case of scurvy, though the ships were much at sea, and their crews confined for a long time to the use of salted provisions. This circumstance he attributed in a great measure to the liberal use of lemon-juice, issued to the men from the surgeons, and occasionally from the purser's department.

In the following letter, which, as it contains some useful hints on other important points of the economy of ships, I insert at length—you will find an answer to some queries I proposed to him on the subject of the lemon-juice :



*Royal Hospital, Haslar, 19th April, 1811.*

DEAR SIR,

I have the honour to acknowledge the receipt of your letter of the 17th inst. and permit me to assure you, it will afford me much pleasure to give you any information in my power to the inquiries you have done me the honour to make, relating to the medical department of the British navy.

As you have acquainted me that the Essex will probably sail in two or three days, I am sorry I cannot procure you in time the ration, as issued to the navy.

The sick-bay, in ships of the line, is placed forward on the main-deck, under the fore-castle, and separated by a bulk-head generally made of canvas, with wooden frames, so as to be easily taken down and removed, as occasion may require.

I am of opinion, the constant wetting and washing decks, more especially during the winter season, is very prejudicial to the health of seamen, producing catarrhal and pulmonick complaints. When it is necessary to wash them, the state of the weather should be attended to; when cold and moisture prevails, it is preferable to dry rub them with sand.—I cannot exactly say what may be the cost of lemon-juice on its arrival in this country, freightage inclusive; but I do not think it much exceeds 2s. 6d. (sterling) per gallon; there is a pint of rectified spirits of wine to every nine pints of the juice, to keep it from fermentation. There cannot be a doubt that the citrick acid is a powerful means in preventing scurvy, when the ship's company has been any length of time on salt provisions; but much depends upon the goodness of provisions, which has of late years been particularly attended to in the navy; taking also into consideration the internal economy of the ship, free ventilation of air in



every part, with a strict attention to the personal cleanliness of the men.

I shall be very happy to hear from you, when an opportunity and leisure permit. Believe me to be,

Dear sir,

Your most obedient humble servant,

JOHN GRAY.

TO DR. BARTON, *U. S. ship Essex,*  
*Cowes, Isle of Wight.*

During the latter end of the year 1809, and the summer of 1810, I had an opportunity of trying the efficacy of the simple expressed juice of limes, which was liberally allowed on my indent, by commodore Decatur, in eight or nine cases of sea-scurvy, which occurred on board of the frigate *United States*. Two of these cases were very bad ones. I had the satisfaction to find that I easily checked the disorder by an early and liberal administration of lime-juice, undiluted, three or four times a day, and in the form of lemonade, for drink, at all times. These good effects were witnessed by Dr. Gerard Dayers, now acting-surgeon of the *U. S. brig Viper*, and Mr. William Clarke,\* at present surgeon's-mate on board of the *United States*, both at that time my mates in that ship.

The juice prepared, as mentioned in Dr. Gray's letter to me, just quoted, is the same kind as that of which I had the pleasure to furnish you a specimen by lieutenant Ballard, last July. It was one of four dozen bottles I brought from England. This quantity was generously furnished by captain Smith, upon my requisition, although it had never been customary.

\* The first of these gentlemen is now surgeon of the *Adam's* frigate, and the latter, surgeon of one of our sloops of war.

to allow the article to our medical department. The experience I had with this acid during our passage home of two months, confirmed the high opinion I had conceived of its usefulness in large quantities, from the information I had received of the British surgeons, as well as the limited experience I myself had with it in commodore Decatur's ship. I found it peculiarly efficacious in relieving the stomach from that distressing and convulsive reching from sea-sickness, by mixing it with a portion of the salt of tartar, and administering the draught in the quantity of half a tumbler full, while in a state of effervescence. Two of the most distressing cases of sea-sickness that I ever witnessed, were on board the Essex in our home passage—the lady of the late American minister, and lieut. Grayson, of the marine corps, who was bearer of dispatches. Though neither of these persons seemed to be aware of the danger they were in, from the violent convulsive reching that always came on during any turbulence of the sea, yet I was not unfrequently very justly apprehensive of serious consequences supervening upon this uninterrupted sickness. They were both much relieved by occasionally quaffing the effervescing lime-juice; and I am persuaded that the temporary relief thus obtained, which was generally followed by a short respite from the convulsive reching, enabled them to support life during the continuance of rough weather.

From all these circumstances, I am strongly impressed with a desire to propose the introduction of *preserved lemon or lime-juice*, into general and liberal use in our ships and vessels of war.

It is prepared in the island of Sicily, and other parts of the Mediterranean. It is purchased on the spot for 1*s.* 6*d.* sterling per gallon.

I think one of our small publick vessels might be sent thither for the purpose of purchasing on account of government, a large quantity of the juice. Thus would the freightage be saved, which, were it imported in merchant ships, would be very considerable.

I submit the feasibility of this plan to your better judgment and decision. In whatever way, however, this article be imported into this country, care should be taken to procure it good, as its long preservation depends materially upon its pristine purity.

If, sir, you should think it expedient and proper to allow the hospital department of our ships to be furnished with this article, I would propose that it be yielded to them in the proportions mentioned in the tables I have drawn up in the following pages.\*

With a hope that this scheme, which, with a view to the benefit of the service, I have offered for your consideration, will meet your approbation, I have the honour to be,

Sir, with very great respect,

Your obedient servant,

WILLIAM P. C. BARTON.

*Lancaster, Nov. 1811.*

*To the Hon. PAUL HAMILTON, Esq.*

*Secretary of the Navy, Washington.*

The preceding letter was an effort to accomplish an object which I could not but believe was one eminently entitled to the notice of the secretary of the navy. With a view to give my proposal more weight, I applied to commodore Rodgers and captain Porter, for their assistance in the business. The answers of these officers were highly favourable to the design of the plan suggested in the letter to Mr. Hamilton. The

\* See Section III. following.

motive that induced me to write it, was grounded entirely on a desire to benefit the service. I was too fully convinced of the absolute necessity for the introduction of this acid into use in our ships, not to make every possible effort in my power to accomplish so important an object. Why these attempts on my part, to call the attention of the secretary to the subject, were unavailing; or how it happened that my endeavours to elicit his inquiries respecting the expediency of the plan I had proposed, were fruitless: I know not. All I can say is, that both proved abortive, and my memorial was not noticed from the department.

Though the first proposition was not acceded to, it may not be inexpedient to make a new effort to achieve so desirable an object. In order that this second attempt may have more weight than the former one, I will insert two letters from officers of high standing, in favour of adopting such a plan. For the sake of connexion, I shall insert the whole of the correspondence, which was as follows:

*Newport, R. I. December 28, 1811.*

SIR,

To a commander who takes so much interest in, and so much pains to establish the comfort of his men, as do you, I feel assured I shall not apply in vain for co-operative influence in accomplishing the adoption by the secretary of the navy, of any plan contributive to the health of the crews of our ships, and, in-so-far, the well-being of the navy.

I therefore send for your perusal, a letter addressed to Mr. Hamilton, on an important subject as concerns the health of seamen. I could wish to have your opinion on the subject of it, and, if you think proper, your influence in recommending it to the notice of the secretary.

The letter, of which the enclosed is a copy, I transmitted to Mr. Hamilton in November last.

I am, sir, with great respect and esteem,

Your obedient servant,

WILLIAM P. C. BARTON.

Capt. PORTER, *Essex*.

*U. S. Frigate Essex, Newport Roads, 31st Dec. 1811.*

SIR,

I have received your letter of this date, accompanied by the copy of a communication made by you to the honourable secretary of the navy, on the introduction of lemon-juice into general and liberal use in the hospital department of ships and vessels of the U. S. navy.

I feel myself highly flattered by the manner in which you have requested my opinion on the subject, and, so far as my influence may extend, over vessels destined on distant voyages, shall certainly use means to have them liberally supplied with the article recommended by you: I shall also recommend to my brother officers the introduction of it on board their vessels; and shall take the first favourable opportunity of mentioning the subject to the secretary of the navy.

My opinion as to the efficacy of lime-juice in preventing and removing scorbutick complaints, has been long since firmly established, founded on some of the facts mentioned in your letter, and on experience. In the Mediterranean, where the opportunities of providing fresh provisions for the crews were not so frequent as on the home station, my vessel, by the advice of doctor Heap, was constantly supplied with lemon-juice, which we provided at Messina in large quantities, nearly as cheap as vinegar, and issued to the crew in the lieu thereof, by which means my men were



never affected by the scurvy, when several cases of it appeared about the same time on board other vessels on the same station.

Salt of lemon I have also found to have its beneficial effects, more convenient because more portable, but much too expensive for general use. On long voyages through different climates, where the transitions from heat to cold and from dry to wet are very great and frequent, the ravages of the scurvy are more dreadful, and lemon-juice is found to be indispensably necessary as a preventive to that disease; for after long use of salt provisions, fresh provisions and vegetables have not the desired effect, as they frequently bring on dysenteries more destructive to life than the scurvy; indeed, there have been instances of persons on long voyages, who have suffered greatly by scorbutick affections, that have abstained entirely from the use of salt provisions.

It requires the utmost care to preserve a northern constitution on the coast of Africa, near the line, from the scurvy; and I have understood that the British ships of war stationed there, are well supplied with lime or lemon-juice, and that to each of the crew a spoon-full is issued, to be taken every morning fasting, and has been found to have the effect wished; this practice is also pursued by some of the most provident India captains, and to that circumstance is frequently owing the preservation of the health of their crews.

Sudden and frequent changes of climate, great exposures to inclement weather, violent fatigue, the bad air created on board ships from uncleanness, and bad provisions and water, are among the principal causes of the scurvy at sea; some of those causes also produce the same disease in armies; and it is beyond a doubt, that the most powerful remedy for the com-

plaint, is acid of lemons or limes; with which all those having charge of the medical department should always be supplied, and the quantity should be in proportion to the liability of men being exposed to such causes.

In the present state of our navy, while in our natural climate, where we are not greatly exposed, when due attention is paid to the comfort of our men, and the cleanliness of our ships, cases of the scurvy rarely occur; but the time may come when we may be ordered on a different service; and should it be the case, I am convinced that a strict attention to your plan would guard the seaman from the greatest evil to which he is liable.

I have the honour to be, respectfully,

Your obedient servant,

D. PORTER.

Dr. WM. P. C. BARTON, *Surgeon of*  
*the U. S. frigate Essex.*

*Newport, R. I. January 4, 1812.*

SIR,

From the desire I feel to get introduced into our navy, the free use of *clarified lemon-juice*, as allowed to the ships and vessels in his Britannick Majesty's navy, I addressed a letter in November last, to the secretary of the navy on this subject.

I deem this an article so invaluable, nay so indispensable, to the hospital department of ships of war, in large quantities on foreign service, and in smaller proportions on the home station—that I would wish to have my proposition for its introduction into our navy, seconded by that influence which the coinciding opinions of commanders of high standing always does, and ever ought to afford, in the establishment of any

plan or plans, for the better conditioning the crews of our ships.

I therefore exhibited to the very sensible and well-informed commander of the frigate to which I am attached, a copy of my letter to the secretary on the subject of the lemon juice, and requested his opinion on the salutariness and efficiency of introducing the liberal use of it as proposed to the secretary, on board the ships and vessels of war belonging to the United States.

His letter to me on this subject, is highly in favour of its introduction, when our navy shall be so much extended, that our ships may be frequently ordered on foreign service. It speaks however for itself. I have taken the liberty to send it, together with a copy of my letter to the secretary, for your perusal.

It will afford me great pleasure if you, too, are favourably inclined towards the introduction of this article into our navy.

Your influence in recommending to the attention of the secretary, the consideration of this subject, I should be glad to see exerted, provided you think the subject merits it.

May I beg the favour of you, to give me when you return the enclosed letters, your opinion on this subject.

I have the honour to be, sir,

With very great respect,

Your obedient servant,

WILLIAM P. C. BARTON.

COMMODORE JOHN RODGERS,

President Frigate, Newport Roads.

*U. S. Frigate President, Newport, Jan. 6, 1812.*

SIR,

Your letter of the 4th inst. with the papers it accompanied, relative to the benefits which you suggest would result to the crews of our ships of war, by a more general and frequent use of the clarified lemon-juice, I duly received.

Your observations relative to the effects of this valuable acid, as a preventive against scurvy; as also of its efficacy in removing from the system that horrid disease, to which seamen (especially after long voyages, when their diet has consisted principally of salted provisions) are particularly liable, I have perused with much pleasure: as well because they serve as a proof that you wish to benefit the service by your experience; as of my conviction of the correctness of what you represent. In the course of my own observation, I have in many instances witnessed the salutary effects of acids, and particularly those of limes and lemons, not only in removing scorbutick affections from, but in fortifying the system against the disease; and I have not the least doubt, but the most beneficial effects would result by the introduction of lime or lemon juice on board of our ships of war, in the manner you mention; particularly when they are employed on foreign service.

In the years 1800 and 1801, I cruised near thirteen months on the coast of Guiana, in the U. S. sloop of war Maryland; and although the climate is considered one of the most unwholesome, my ships' company nevertheless, from having very little communication with the shore, was for a considerable time particularly healthy. The men being obliged however to live almost entirely on salt provisions, the scurvy (after eight or

nine months) made its appearance, and in a short time made such ravages on the constitutions of a large portion of them, as necessarily obliged me to return into port, (Surrinam) where, to my astonishment, in fifteen days after my arrival, by the profuse use of limes and sour oranges, which were not only taken internally, but applied externally, by cutting them and rubbing the body, legs, thighs, and arms, with them several times a day, the complaint was completely eradicated from the system of every person who had had it; although several of them had been affected to such a degree as to lose, some a number of, and others the whole of their teeth. After this, from the profuse and constant use of the same description of fruit, the same men, as well as the rest of the ships' company, continued healthy and particularly free from scorbutick affections. In my own estimation, this case being of itself a sufficiently conclusive proof of the importance of lemon-juice, I shall content myself at present by adding, that I hope your endeavours to get it introduced into the service to the extent you mention, may meet with that attention which they so justly merit; and I would have you to be assured that, so far as is in my power to render you any assistance in effecting so desirable an object, I will do so with infinite pleasure.

Verjuice, or cider made from crab-apples, is, I have understood, endowed with anti-scorbutick qualities, not very far inferiour to lime or lemon-juice. This liquor can at all times be procured in our own country, and I beg leave to suggest to your better experience, whether, on home service, it would not answer in the place of lemon-juice.

I have noticed, with particular pleasure, Captain



Porter's remarks to you on the virtues of lime and lemon-juices ; they are certainly very pertinent and well worthy of respectful notice.

I am, sir,

With great respect,

Your obedient servant,

JOHN RODGERS.

DR. WM. P. C. BARTON,

*Surgeon of the U. S. Frigate Essex.*

### SECTION III.

*Of the mode of furnishing the medicine and store chests.*

The next subject of consideration, according to my plan, is, the present irregular and unsystematic mode of supplying the ships and vessels of war, with medicines and hospital stores.

According to the existing custom, when a surgeon joins a ship, he examines into the state of the medicine chest, and the condition of the hospital store-room. He then draws up, if he thinks proper, a requisition for all medicines, stores, articles, utensils, instruments, &c. that, in his opinion, are necessary to complete the medical department. This is signed by the commander of the ship, who, in all probability, knows not whether the articles he is authorizing the purchase of, be necessary or not—he is unacquainted with the names of medicines, or the requisite quantities of them. If the surgeon happen to be experienced in the service, and a conscientious man, his requisition will exhibit a faithful schedule of the deficient necessaries, and in such case the government is neither defrauded, nor imposed upon by unnecessary cost. But, should the surgeon, on the other hand, not be that upright and

fair man—or if he be rigidly honest, but inexperienced, in such matters, what a latitude is there for fraud, embezzlement, and imposition!—or how innocently may the surgeon be betrayed into the error of overfurnishing, and thus oppressing the government with unnecessary expense; or into the opposite extreme, of replenishing too parsimoniously, and thus contriving injury to the service—so far as it be connected with the ship to which he may belong!

In fact, there cannot be a system more opposite to economy, more incompatible with the good of the service, or more pernicious in the temptation it holds forth, for unnecessary waste, and even fraud: than this plan of allowing the medical and hospital store-chests of our ships, to be fitted out and replenished upon the indent of the surgeon of the ship. It is true, an apparent check would seem to exist in the necessity there is for the approval of this indent; but this is a mere nominal controul. It has no virtual operation or effect on the licence of the surgeon to commit irregularities, and vanishes entirely upon a nearer inspection.—For how can the commander of a vessel be reasonably supposed acquainted with the precise proportions of medicines, stores, &c. requisite for the use of his ship? His ignorance on this subject would tend to make him diffident of withholding his ratification, even though he should feel so inclined.

It is therefore expedient to guard against possible abuses, so far as practicable; and to forbear by the establishment of loose systems, to *invite* irregularities. The practice of fitting out the medical department of ships, in accordance to the indent drawn up by the surgeons of them, existed many years ago in the British navy. But it was discovered, that the abuses and temptations to embezzlement, to which it necessarily

gave origin, were of a nature extravagantly ruinous. Accordingly the plan of established proportions was adopted, and the evil thus remedied.

The practice of permitting apothecaries to make requisitions, in the absence of the surgeon of the ship, and to furnish the articles specified by themselves, or to survey the ships when the medical department wants replenishing, is equally improper. It cannot, I apprehend, be productive of any thing else, than a medicine-chest overloaded with a superabundance of useful, and often-times a cumbersome load of useless articles—a store-room, furnished with a superfluity of bad, and a paucity of good and wholesome comforts—and a slender proportion of such articles or medicines, as either from their rarity or expense, hold forth no prospect to the apothecary of reaping an exorbitant profit from overfurnishing them.

When I was ordered to the frigate *United States* in the beginning of the year 1809, I found the medical department of that ship overstocked with an useless mass of old, inert, and bulky medicines, roots, &c.—and of those that were useful and good, there was such a superabundance, as to be troublesome to take care of, and in fact more than enough for a cruise of three years. I believe I was not singular in my complaints on this subject. Several of the surgeons of the other vessels, particularly the larger ones, furnished with medicines, &c. at Washington, by the indent of the contractor, were sensible of the same abuses.

It is always impolitick to choke up the store-room, which is at best very small, with such an useless quantity of medicines. They either become damaged, or cause the surgeon or his mates to be wasteful.

The impropriety of uniting the office of director and purveyor, either in hospitals, or in the medical depart-

ment of ships, from the invitation it extends to the most nefarious practices, has long been known in the British army and their naval and military hospitals. It is noticed by almost all English writers on this subject, who lay peculiar stress upon the impolicy of such a system. Monro, in his work on the army, speaks with strong emphasis, of the pernicious and destructive consequences of this practice—and of the known detriment that frequently accrued from it, to the poor distressed soldiers.

The province of a purveyor, or contractor, ought to be entirely distinct from that of the director. And the druggist who furnishes the medicines, and the grocer who supplies the store chests of our ships, ought to have nothing to do with the specification of the quantities of medicines and necessaries required to complete them.

With a view to correct these abuses, I would in the first place propose: that there be established a sufficient number of commissioners to govern the medical department of the navy, and that they be styled a “BOARD OF MEDICAL COMMISSIONERS, *for conducting the hospital department of the U. S. naval service, and providing for sick, hurt, and disabled seamen.*”

I would recommend that for the present, this board shall be composed of six or eight of the senior surgeons of the navy, of known abilities. It should be their peculiar province to furnish the navy department with such schemes, or systems of arrangement, as in their opinion would be adopted with most interest to the service. They should create established proportions of medicines, dietetick articles, instruments and utensils, necessary for the different vessels, &c. &c.

Such an association appertains to the British navy, under the title of “*Commissioners for conducting his*

*majesty's transport service, for taking care of sick and hurt seamen, &c."*

I would propose that the board of medical commissioners, should also be a board of examiners of candidates for the appointments of surgeons, and surgeons'-mates in the navy—and that persons should never be commissioned in these capacities in the United States naval service, until they had satisfactorily passed this board.\* In fine, the board of medical commissioners should maintain a general superintendence over the medical department of our ships, and should from time to time, suggest to, or advise the secretary of the navy, of any alterations, amendments, or arrangements, that in their opinions might be deemed for the benefit of the medical naval service. The physicians and surgeons of the hospital or hospitals at Washington, as the seat of government, might *ex officio*, constitute a standing part of the board. It should be *their* duty to examine the returns of expenditure and practice, made by the surgeons to the navy department, after a cruise. They should survey the state of the instruments, as well as the remains of medicines, stores, utensils, &c. returned by the surgeons of ships, and which are to be re-deposited in the store-rooms of the hospital agent. The physicians and surgeons of the hospital at Washington, Philadelphia, Norfolk, New-York, Newport, and Boston, should be styled, *agents of the board of medical commissioners*—and should receipt to the surgeons for every thing returned by them into the hospital agents' store-rooms on these different stations; and should file a specification of their condition when returned.

\* Graduates in medicine should be exempted from this examination, unless there is reason to believe they have received their degrees by favour.



Until such a board of commissioners be organized, I would propose, for the furnishing of our ships with medicines, comforts, and necessaries, the following tables of proportions.

They contain the exact proportions in which medicines, utensils, fumigating articles, comforts, bedding, lemon-juice, and other necessaries ought to be furnished to our ships of war, so as to supply them amply with every thing requisite; maintaining at the same time as strict an observance of economy, as is consistent with the necessities of the sick, and of consequence the interest of the service.

Although we have not at this period any ships of the first or second rate actually afloat, yet with a view to render the subject complete, and because I look forward with pleasing anticipations, a few years, when a proud fleet of ships of the line shall stretch itself along our shores, I have added tables of proportions for such vessels.

They will be useful, I hope, when our seventy-fours are built and commissioned. I am persuaded this plan would be a saving of one-third, or perhaps one-half, of the present cost of our medicine and store chests.

The articles in the proportions here stated, should be properly put up in chests, boxes, &c. and be ready for delivery, *on the shortest notice*, to any ships that may want them, by the agent of the medical commissioners, in such port or station as the vessels requiring out-fit may be at. When these vessels only want replenishing, it ought to be the duty of the medical agent of the port, to survey the state of the medicine and store chests, and furnish such articles as are deficient. The economy and promptness of such a plan must be obvious to every one.



*Proportions of Bedding, Lemon-juice, and Necessaries, for a Ship of the First Rate.*

To be completed annually by survey.	{	Sheets,	.	.	.	.	20 pairs.	
		Pillows,	.	.	.	.	20 No.	
		Night-caps,	.	.	.	.	20 —	
		Hair-beds,	.	.	.	.	20 —	
		Lemon-juice,	.	.	.	.	54 galls.	
		Calico,	.	.	.	.	200 yards.	
		Welch flannel,	.	.	.	.	140 —	
		Lint,	.	.	.	.	10 lbs.	
		Tourniquets,	.	.	.	.	15 No.	
		Rupture	{	Right side,	.	.	.	12 —
		Trusses.		Left side,	.	.	.	6 —
		Double,		.	.	.	3 —	
		Bed-pans,	.	.	.	.	2 —	
		Urinals,	.	.	.	.	2 —	
Spitting-pots,	.	.	.	.	8 —			
Cast-iron sauce- pans.	{	Two quarts,	.	.	.	1 —		
		Three pints,	.	.	.	1 —		
		One pint,	.	.	.	2 —		

To be completed every six months by survey.	{	Tea,	.	.	.	.	72 lbs
		Sago,	.	.	.	.	64 —
		Rice,	.	.	.	.	128 —
		Pearl-barley,	.	.	.	.	128 —
		Soap,	.	.	.	.	25 —
		Soft sugar,	.	.	.	.	412 —
		Portable-soup,	.	.	.	.	100 —

Packages.	{	Lemon- juice.	{	Cases,	.	.	.	6 No.
				Bottles,	.	.	.	108 —
		Chest for calico, &c.	.	.	.	1 —		
		Chest for grocery,	.	.	.	1 —		
		Boxes for portable-soup,	.	.	.	2 —		
		Tin canisters, for	{	Tea,	.	.	.	1 —
				Sago,	.	.	.	1 —
				Rice,	.	.	.	1 —
				Pearl-barley,	.	.	.	1 —
				Portable-soup,	.	.	.	4 —
Cask for sugar,	.	.	.	1 —				



*Proportions of Bedding, Lemon-juice, and Necessaries, for a Ship of the Second Rate.*

To be completed annually by survey.	{	Sheets,	.	.	.	.	16 pairs.		
		Pillows,	.	.	.	.	16 No.		
		Night-caps,	.	.	.	.	16 —		
		Hair-beds,	.	.	.	.	16 —		
		Lemon-juice,	.	.	.	.	45 galls.		
		Calico,	.	.	.	.	180 yards.		
		Welch flannel,	.	.	.	.	120 —		
		Lint,	.	.	.	.	9 lbs.		
		Tourniquets,	.	.	.	.	12 No.		
		Rupture Trusses.	{	Right side,	.	.	.	12 —	
				Left side,	.	.	.	6 —	
				Double,	.	.	.	3 —	
		Bed-pans,	.	.	.	.	2 —		
		Urinals,	.	.	.	.	2 —		
		Spitting-pots,	.	.	.	.	7 —		
Cast-iron sauce- pans.	{	Two quarts,	.	.	.	1 —			
		Three pints,	.	.	.	1 —			
		One pint,	.	.	.	2 —			
To be completed every six months by survey.	{	Tea,	.	.	.	.	63 lbs.		
		Sago,	.	.	.	.	.	56 —	
		Rice,	.	.	.	.	.	112 —	
		Pearl-barley,	.	.	.	.	.	112 —	
		Soap,	.	.	.	.	.	21 —	
		Soft sugar,	.	.	.	.	.	348 —	
		Portable-soup,	.	.	.	.	.	100 —	
		Packages.	{	Lemon- juice.	{	Cases,	.	.	.
Bottles,	.					.	.	.	90 —
Chest for calico, &c.	.			.	.	.	1 —		
Chest for grocery,	.			.	.	.	1 —		
Boxes for portable-soup,	.			.	.	.	2 —		
Tin-canisters for	{			Tea,	.	.	.	.	1 —
				Sago,	.	.	.	.	1 —
				Rice,	.	.	.	.	1 —
				Pearl-barley,	.	.	.	.	1 —
				Portable-soup,	.	.	.	.	4 —
Cask for sugar,	.	.	.	.	1 —				





*Proportions of Bedding, Lemon-juice, and Necessaries, for a Ship of the Third Rate.*

To be completed annually by survey.	{	Sheets,	.	.	.	.	12	pairs.	
		Pillows,	.	.	.	.	12	No.	
		Night-caps,	.	.	.	.	12	—	
		Hair-beds,	.	.	.	.	12	—	
		Lemon-juice,	.	.	.	.	45	galls.	
		Calico,	.	.	.	.	160	yards.	
		Welch flannel,	.	.	.	.	100	—	
		Lint,	.	.	.	.	6½	lbs.	
		Tourniquets,	.	.	.	.	10	No.	
		Rupture Trusses.	{	Right side,	.	.	.	9	—
				Left side,	.	.	.	6	—
				Double,	.	.	.	3	—
		Bed-pans,	.	.	.	.	2	—	
		Urinals,	.	.	.	.	2	—	
		Spitting-pots,	.	.	.	.	6	—	
Cast-iron sauce-pans.	{	Two quarts,	.	.	.	1	—		
		Three pints,	.	.	.	1	—		
		One pint,	.	.	.	2	—		

To be completed every six months by survey.	{	Tea,	.	.	.	.	54	lbs.
		Sago,	.	.	.	.	48	—
		Rice,	.	.	.	.	96	—
		Pearl-barley,	.	.	.	.	96	—
		Soap,	.	.	.	.	15	—
		Soft sugar,	.	.	.	.	284	—
		Portable-soup,	.	.	.	.	75	—

Packages.	{	Lemon-juice.	{	Cases,	.	.	.	5	No.
				Bottles,	.	.	.	90	—
	{	Chest for calico, &c.			.	.	.	1	—
		Chest for grocery,			.	.	.	1	—
		Boxes for portable-soup,			.	.	.	1	—
	{	Tin-canisters for	{	Tea,	.	.	.	1	—
				Sago,	.	.	.	1	—
				Rice,	.	.	.	1	—
				Pearl-barley,	.	.	.	1	—
				Portable-soup,	.	.	.	3	—
{			Cask for sugar,	.	.	.	1	—	

*Proportion of Medicines, Utensils, and Fumigating Articles,  
for a Ship of the Fourth Rate.*

	lb. oz. dr.		lb. oz. dr.
Acid. nitros dilut.	3	Opium purif. . .	9
Acid vitriol. dilut.	4 8	Pil. hydrarg. . .	6
Adip suillæ, . .	4 8	Ras quassiæ, . .	9
Ammonia præp. .	3	Rhab. pulv. . .	6
Antimon. tart. .	1 4	Sal. vol. C. C. . .	2 2
Antimon. pulv. .	6	Sem. lini, . . .	4 8
Aq. ammon. pur. .	6	Senna, . . .	1 8
Aq. litharg. acct. .	2 4	Sperma ceti, . .	1 2
Argent. nitrat. .	6	Sp. Æther nitros, .	4 4
Calomel, . . .	12	Sp. lavend. comp. .	9
Camphor, . . .	6	Sp. vin. rect. . .	1 8
Cera flav. . . .	1 8	Tinct. digital. . .	6
Cerat. lap. calam. .	3	Tinct. ferri. muriat.	3
Cerussa. acetat. .	6	Tinct. opii, . . .	4 4
Cinchon pulv. . .	12	Tinct. rhœi, . . .	12
Confect. aromat. .	3	Tinct. scillæ, . .	3
Confect. opiata, .	9	Ung. ceræ, . . .	9
Crem. tart. . . .	1 8	Ung. hydr. fort. .	6
Creta p. p. . . .	12	Ung. nitrat, . . .	6
Cuprum vitriol, .	3	Ung. resin flav. .	6
Digital. pur pulv. .	1 4	Vin. antimon. . .	4 4
Emplast. cantharid.	4 8	Zinc. vitriol, . .	3
Emplast. cera C. .	1 8	Zinziper. pulv. .	12
Emplast. litharg. .	3		
Emplast. litharg. c. resin,	1 8	<i>Fumigating articles, at the option of the surgeon.</i>	
Extract. colocynth. c. aloec,	3	Vitriolic acid, . .	20 lbs.
Flor. chamæmel, . .	2 4	Nitre purif. . . .	20
Flor. sulph. . . .	1 8		
sulph. viv. . . .	3		
Gum. ammon. gutt.	3	UTENSILS.	
Gum. arab. . . .	1 2	Bolus knives, . .	No. 2
Gum. guaiac. . . .	4 4	Tiles, . . . . .	2
Hydr. nitr. rub. . .	3	Bottles, $\frac{1}{2}$ pint, . .	36
Hydr. muriat. . . .	6	Phials { 2 ounce, . .	36
Jalap. pulv. . . .	1 2	{ 1 ditto, . .	36
Ipecac. pulv. . . .	6	Corks { $\frac{1}{2}$ pint, . .	gross 3
Ipecac. pulv. com. .	3	{ Phial, . . .	6
Kali p. p. . . . .	1 8	Gallipots, in sorts, .	No. 36
Liq. vol. C. C. . .	1 2	Pewter measures, . .	3
Magnes alb. . . .	1 2	Mortar and pestle (marble),	1
Magnes vitriol. . .	36	Ditto, ditto, (metal), .	1
Natron vitriol. . .	18	Ditto, ditto, (Wedgewood),	1
Nitr. purif. . . .	2 4	Scales and weights, .	set 1
Ol. lini, . . . . .	2 4	Spatulas { Pot, . . .	No. 1
Ol. menth. pip. . .	1 1	{ Plaister, . .	1
Ol. olivar, . . . .	3	Funnels, . . . . .	2
Ol. ricini, . . . .	1 8	Sponge, . . . . .	oz. 6
Ol. terebinth, . . .	12	Fine tow, . . . . .	lbs. 6

*Proportions of Bedding, Lemon-juice, and Necessaries, for a Ship of the Fourth Rate.*

To be completed annually by survey.	{	Sheets, . . . . .	9 pairs.		
		Pillows, . . . . .	9 No.		
		Night-caps, . . . . .	9 —		
		Hair-beds, . . . . .	9 —		
		Lemon-juice, . . . . .	27 galls.		
		Calico, . . . . .	80 yards.		
		Welch flannel, . . . . .	50 —		
		Lint, . . . . .	5 lbs.		
		Tourniquets, . . . . .	8 No.		
		Rupture Trusses	{	Right side, . . . . .	9 —
				Left side, . . . . .	6 —
				Double, . . . . .	3 —
{	Bed-pans, . . . . .	2 —			
	Urinals, . . . . .	2 —			
	Spitting-pots, . . . . .	3 —			
Cast-iron sauce- pans.	{	Two quarts, . . . . .	1 —		
		Three pints, . . . . .	1 —		
		One pint, . . . . .	2 —		
To be completed every six months by survey.	{	Tea, . . . . .	27 lbs.		
		Sago, . . . . .	24 —		
		Rice, . . . . .	48 —		
		Pearl-barley, . . . . .	48 —		
		Soap, . . . . .	10 —		
		Soft sugar, . . . . .	192 —		
		Portable-soup, . . . . .	50 —		
Packages.	{	Lemon- juice.	{	Cases, . . . . .	3 No.
			{	Bottles, . . . . .	54 —
	{	Chest for calico, &c. . . . .	1 —		
		Chest for grocery, . . . . .	1 —		
		Boxes for portable-soup, . . . . .	1 —		
		Tin-canisters for	{	Tea, . . . . .	1 —
				Sago, . . . . .	1 —
	Rice, . . . . .			1 —	
	Pearl-barley, . . . . .			1 —	
	{	{	Portable-soup, . . . . .	2 —	
Cask for sugar, . . . . .			1 —		

*Proportion of Medicines, Utensils, and Fumigating Articles,  
for a Ship of the Fifth Rate.*

	lb. oz. dr.		lb. oz. dr.
Acid. nitros dilut.	2 4	Opium purif.	7 4
Acid. vitriol. dilut.	3 12	Pil. hydrarg.	5
Adip. suillæ,	3 12	Ras quassiæ,	7 4
Ammonia præp.	2 4	Rhab. pulv.	5
Antimon. tart.	1 2	Sal. vol. C. C.	1 7
Antimon. pulv.	5	Sem. lini,	3 12
Aq. ammon. pur.	5	Senna,	1 4
Aq. litharg. acet.	1 14	Sperma. ceti.	15
Argent. nitrat.	5	Sp. æther nitros.	3 6
Calomel,	10	Sp. lavend. comp.	7 4
Camphor,	5	Sp. vin. rect.	1 4
Cera flav.	1 4	Tinct. digital.	5
Cerat. lap. calam.	2 8	Tinct. ferri. muriat.	2 4
Cerussa. acetat.	5	Tinct. opii,	3 6
Cinchon. pulv.	10	Tinct. rhœi,	10
Confect. aromat.	2 4	Tinct. scillæ,	2 4
Confect. opiata,	7 4	Ung. ceræ,	7 8
Crem. tart.	1 4	Ung. hydr. fort.	5
Creta p. p.	10	Ung. nitrat.	5
Cuprum vitriol,	2 4	Ung. resin. flav.	5
Digital. pur. pulv.	1 2	Vin. antimon.	3 6
Emplast. cantharid.	3 12	Zinc. vitriol,	2 4
Emplast. cera. C.	1 4	Zinziber. pulv.	10
Emplast. litharg.	2 8		
Emplast. litharg. c. resin,	1 4		
Extract colocynth. c. aloë,	2 4		
Flor. chamæmel,	1 14		
Flor. sulph.	1 4		
sulph. viv.	2 8		
Gum. ammon. gutt.	2 4		
Gum. arab.	15		
Gum. guaiac.	3 6		
Hydr. nitr. rub.	2 4		
Hydr. muriat.	5		
Jalap. pulv.	15		
Ipecac pulv.	5		
Ipecac. pulv. com.	2 4		
Kali, p p.	1 4		
Liq. vol. C. C.	15		
Magnes. alb.	15		
Magnes. vitriol,	30		
Natron vitriol,	15		
Nitr purif.	1 14		
Ol. lini,	1 14		
Ol. menth. pip.	7 $\frac{1}{2}$		
Ol. olivar,	2 8		
Ol. ricini,	1 4		
Ol. terebinth,	10		

*Fumigating articles, at the option  
of the surgeon.*

Vitriolic acid,	15 lbs.
Nitre purif.	15

UTENSILS.

Bolus knives,	No. 2
Tiles,	2
Bottles, $\frac{1}{2}$ pint,	30
Phials { 2 ounce,	30
{ 1 ditto,	30
Corks { $\frac{1}{2}$ pint,	gross 2 $\frac{1}{2}$
{ Phial,	5
Gallipots, in sorts,	No. 30
Pewter measures,	2
Mortar and pestle (marble),	1
Ditto, ditto, (metal),	1
Ditto, ditto, (Wedgewood),	1
Scales and weights,	set 1
Spatulas { Pot,	No. 1
{ Plaister,	1
Funnels,	2
Sponge,	oz. 5
Fine tow,	lbs. 5



*Proportions of Bedding, Lemon-juice, and Necessaries, for a Ship of the Fifth Rate.*

To be completed annually by survey.	{	Sheets,	.	.	.	.	7 pairs.
		Pillows,	.	.	.	.	7 No.
		Night-caps,	.	.	.	.	7 —
		Hair-beds,	.	.	.	.	7 —
	{	Lemon-juice,	.	.	.	.	27 galls.
		Calico,	.	.	.	.	70 yards.
		Welch flannel,	.	.	.	.	40 —
		Lint,	.	.	.	.	4 lbs.
	{	Tourniquets,	.	.	.	.	6 No.
		Rupture Trusses, } Right side,	.	.	.	.	6 —
		} Left side,	.	.	.	.	3 —
	{	} Double,	.	.	.	.	3 —
		Bed-pans,	.	.	.	.	2 —
		Urinals,	.	.	.	.	2 —
		Spitting-pots,	.	.	.	.	3 —
	{	Cast-iron sauce-pans,	.	.	.	.	0 —
		} Two quarts,	.	.	.	.	1 —
		} Three pints,	.	.	.	.	2 —
		} One pint,	.	.	.	.	2 —

To be completed every six months by survey.	{	Tea,	.	.	.	.	22½ lbs
		Sago,	.	.	.	.	20 —
		Rice,	.	.	.	.	40 —
		Pearl-barley,	.	.	.	.	40 —
		Soap,	.	.	.	.	7½ —
		Soft sugar,	.	.	.	.	160 —
		Portable-soup,	.	.	.	.	50 —

Packages.	{	Lemon-juice,	{	Cases,	.	.	.	3 No.
				Bottles,	.	.	.	54 —
	{	Tin canisters, for	{	Chest for calico, &c.	.	.	.	1 —
				Chest for grocery,	.	.	.	1 —
				Box for portable-soup,	.	.	.	1 —
				Tea,	.	.	.	1 —
				Sago,	.	.	.	1 —
				Rice,	.	.	.	1 —
				Pearl-barley,	.	.	.	1 —
				Portable-soup,	.	.	.	2 —
	{	Cask for sugar,	{	.	.	.	.	1 —
				.	.	.	.	1 —

*Proportion of Medicines, Utensils, and Fumigating Articles,  
for a Ship of the Sixth Rate.*

	lb.	oz.	dr.		lb.	oz.	dr.
Acid. Nitros dilut. . . . .	1	4		Opium purif. . . . .	4	4	
Acid. vitriol. dilut. . . . .	2	4		Pil. hydrarg. . . . .	3		
Adip. suillœ, . . . . .	2	4		Ras quassiæ, . . . . .	4	4	
Ammonia præp. . . . .	1	4		Rhab. pulv. . . . .	3		
Antimon. tart. . . . .	6			Sal. vol. C. C., . . . . .	1	1	
Antimon. pulv. . . . .	3			Sem. lini, . . . . .	2	4	
Aq. ammon pur. . . . .	3			Senna, . . . . .	12		
Aq. litharg. acet. . . . .	1	2		Sperma. ceti. . . . .	9		
Argent. nitrat. . . . .	3			Sp. æther nitros. . . . .	2	2	
Calomel, . . . . .	6			Sp. lavend. comp. . . . .	4	4	
Camphor, . . . . .	3			Sp. vin. rect. . . . .	12		
Cera flav. . . . .	12			Tinct. digital. . . . .	3		
Cerat. lap. calam. . . . .	1	8		Tinct. ferri. muriat. . . . .	1	4	
Cerussa. acetat. . . . .	3			Tinct. opii, . . . . .	2	2	
Cinchon. pulv. . . . .	6			Tinct. rhœi, . . . . .	6		
Confect. aromat. . . . .	1	4		Tinct. scillæ, . . . . .	1	4	
Confect. opiata, . . . . .	4	4		Ung. ceræ, . . . . .	4	8	
Crem. tart. . . . .	12			Ung. hydr. fort. . . . .	3		
Creta p. p. . . . .	6			Ung. nitrat, . . . . .	3		
Cuprum vitriol, . . . . .	1	4		Ung. resin. flav. . . . .	3		
Digital. pur. pulv. . . . .	6			Vin. antimon. . . . .	2	3	
Emplast. cantharid. . . . .	2	4		Zinc. vitriol, . . . . .	1	4	
Emplast. cera c. . . . .	12			Zinziber. pulv. . . . .	6		
Emplast. litharg. . . . .	1	8					
Emplast. litharg. c. resin, . . . . .	12						
Extract. colocynth. c. aloë, . . . . .	1	4					
Flor. chamæmel. . . . .	1	2					
Flor. sulph. . . . .	12						
sulph. viv. . . . .	1	8					
Gum. ammon. gutt. . . . .	1	4					
Gum. arab. . . . .	9						
Gum. guaiac. . . . .	2	2					
Hydr. nitr. rub. . . . .	1	4					
Hydr. muriat. . . . .	3						
Jalap. pulv. . . . .	9						
Ipecac. pulv. . . . .	3						
Ipecac pulv. com. . . . .	1	4					
Kali p. p. . . . .	12						
Liq. vol. C. C. . . . .	9						
Magnes. alb. . . . .	9						
Magnes. vitriol. . . . .	18						
Natron vitriol. . . . .	9						
Nitr. purif. . . . .	1	2					
Ol. lini, . . . . .	1	2					
Ol. menth. pip. . . . .	4 $\frac{1}{2}$						
Ol. olivar. . . . .	1	8					
Ol. ricini, . . . . .	12						
Ol. terebinth. . . . .	6						

*Fumigating articles, at the option  
of the surgeon.*

Vitriolic acid, . . . . .	10 lbs.
Nitre purif. . . . .	10

UTENSILS.

Bolus knives, . . . . .	No 2
Tiles, . . . . .	2
Bottles, $\frac{1}{2}$ pint, . . . . .	18
Phials { 2 ounce, . . . . .	18
{ 1 ditto, . . . . .	18
Corks { $\frac{1}{2}$ pint, . . . . . gross	1 $\frac{1}{2}$
{ Phial, . . . . .	3
Gallipots, in sorts, . . . . .	No. 18
Pewter measures, . . . . .	2
Mortar and pestle (mar-	
ble), . . . . .	1
Ditto, ditto, (metal), . . . . .	1
Ditto, ditto, (Wedgewood), . . . . .	1
Scales and weights, . . . . .	set 1
Spatulas { Pot, . . . . .	No. 1
{ Plaister, . . . . .	1
Funnels, . . . . .	2
Sponge, . . . . .	oz. 4
Fine tow, . . . . .	lbs. 8

*Proportions of Bedding, Lemon-juice, and Necessaries, for a Ship of the Sixth Rate.*

To be completed annually by survey.	{	Sheets,	.	.	.	.	4 pairs.		
		Pillows,	.	.	.	.	4 No.		
		Night-caps,	.	.	.	.	4 —		
		Hair-beds,	.	.	.	.	4 —		
		Lemon-juice,	.	.	.	.	18 galls.		
		Calico,	.	.	.	.	50 yards.		
		Welch flannel,	.	.	.	.	30 —		
		Lint,	.	.	.	.	3 lbs.		
		Touiniquets,	.	.	.	.	4 No.		
		Rupture Trusses.	{	Right side,	.	.	.	.	6 —
				Left side,	.	.	.	.	3 —
				Double,	.	.	.	.	3 —
		Bed-pans,	.	.	.	.	.	2 —	
		Urinals,	.	.	.	.	.	2 —	
		Spitting-pots,	.	.	.	.	.	2 —	
Cast-iron sauce- pans.	{	Two quarts,	.	.	.	.	0 —		
		Three pints,	.	.	.	.	1 —		
		One pint,	.	.	.	.	2 —		
To be completed every six months by survey.	{	Tea,	.	.	.	.	13½ lbs.		
		Sago,	.	.	.	.	12 —		
		Rice,	.	.	.	.	24 —		
		Pearl-barley,	.	.	.	.	24 —		
		Soap,	.	.	.	.	4½ —		
		Soft sugar,	.	.	.	.	96 —		
		Portable-soup,	.	.	.	.	25 —		
Packages.	{	Lemon- juice.	{	Cases,	.	.	.	.	2 No.
				Bottles,	.	.	.	.	36 —
		Chest for calico, &c.	.	.	.	.	1 —		
		Chest for grocery,	.	.	.	.	1 —		
		Boxes for portable-soup,	.	.	.	.	0 —		
		Tin-canisters for	{	Tea,	.	.	.	.	1 —
				Sago,	.	.	.	.	1 —
				Rice,	.	.	.	.	1 —
				Pearl-barley,	.	.	.	.	1 —
				Portable-soup,	.	.	.	.	1 —
Cask for sugar,	.	.	.	.	1 —				

*Proportion of Medicines, Utensils, and Fumigating Articles,  
for a Sloop.*

	lb. oz. dr.		lb. oz. dr.
Acid. nitros. dilut. .	1	Opium purif. . .	3
Acid. vitriol. dilut. .	1 8	Pil. hydrarg. . .	2
Adip. suillæ, . .	1 8	Ras quassiæ, . .	3
Ammonia præp. . .	1	Rhab pulv. . .	2
Antimon. tart. . .	4	Sal vol. C. C. . .	6
Antimon. pulv. . .	2	Sem. lini, . . .	1 8
Aq. ammon pur. . .	2	Senna, . . .	8
Aq. litharg. acet. . .	12	Sperma. ceti. . .	6
Argent. nitrat. . .	2	Sp æther nitros. . .	1 4
Calomel, . . .	4	Sp lavend. comp. . .	3
Camphor, . . .	2	Sp. vin. rect. . .	8
Cera flav. . . .	8	Tinct. digital. . .	2
Cerat. lap. calam. . .	1	Tinct. ferri. muriat. . .	1
Cerussa acetat. . .	2	Tinct. opii. . . .	1 4
Cinchon pulv. . .	4	Tinct. rhœi, . . .	4
Confect. aromat. . .	1	Tinct. scillæ, . . .	1
Confect. opiata, . .	3	Ung ceræ, . . .	3
Crem. tart. . . .	8	Ung. hydr. fort. . .	2
Creta p. p. . . .	4	Ung. nitrat, . . .	2
Cuprum vitriol, . .	1	Ung. resin. flav. . .	2
Digital pur. pulv. . .	4	Vin. antimon. . . .	1 4
Emplast. cantharid. .	1 8	Zinc. vitriol, . . .	1
Emplast. cera C. . .	8	Zinziber. pulv. . .	4
Emplast. litharg. . .	1		
Emplast. litharg. c. resin,	8	<i>Fumigating articles, at the option of the surgeon.</i>	
Extract. colocynth. c. aloë,	1	Vitriolic acid, . . .	10 lbs.
Flor. chamæmel. . .	12	Nitre purif. . . .	10
Flor. sulph. . . .	8		
sulph. viv. . . .	1		
Gum. ammon. gutt. .	1	UTENSILS.	
Gum. arab. . . . .	6	Bolus knives, . . .	No 2
Gum. guaiac. . . .	1 4	Tiles, . . . . .	2
Hydr. nitr. rub. . .	1	Bottles, $\frac{1}{2}$ pint, . . .	12
Hydr. muriat. . . .	2	Phials { 2 ounce, . . .	12
Jalap pulv. . . . .	6	{ 1 ditto, . . .	12
Ipecac. pulv. . . . .	2	Corks { $\frac{1}{2}$ pint, . . . gross	1
Ipecac. pulv. com. . .	1	{ Phial, . . . .	2
Kali p. p. . . . .	8	Gallipots, in sorts, . .	No. 12
Liq. vol. C. C. . . .	6	Pewter measures, . . .	2
Magnes. alb. . . . .	6	Mortar and pestle (marble),	1
Magnes. vitriol. . .	12	Ditto, ditto, (metal), .	1
Natron vitriol. . . .	6	Ditto. ditto, (Wedgewood),	1
Nitr. purif. . . . .	12	Scales and weights, . .	set 1
Ol. lini, . . . . .	12	Spatulas { Pot, . . . .	No. 1
Ol. menth. pip. . . .	3	{ Plaister, . . . .	1
Ol. olivar. . . . .	1	Funnels, . . . . .	2
Ol. ricini, . . . . .	8	Sponge, . . . . .	oz. 3
Ol. terebinth. . . .	4	Fine tow, . . . . .	lbs. 2

*Proportions of Bedding, Lemon-juice, and Necessaries, for a Sloop.*

To be completed annually by survey.	{	Sheets,	.	.	.	.	3 pairs.
		Pillows,	.	.	.	.	3 No.
		Night-caps,	.	.	.	.	3 —
		Hair-beds,	.	.	.	.	3 —
	{	Lemon-juice,	.	.	.	.	9 galls.
		Calico,	.	.	.	.	30 yards.
		Welch flannel,	.	.	.	.	20 —
		Lint,	.	.	.	.	2 lbs.
		Tourniquets,	.	.	.	.	4 No.
		Rupture Trusses,	{	Right side,	.	.	3 —
				Left side,	.	.	3 —
				Double,	.	.	3 —
	{	Bed-pans,	.	.	.	.	1 —
		Urinals,	.	.	.	.	1 —
		Spitting-pots,	.	.	.	.	1 —
	{	Cast-iron sauce-pans,	{	Two quarts,	.	.	0 —
				Three pints,	.	.	1 —
				One pint,	.	.	1 —
To be completed every six months by survey.	{	Tea,	.	.	.	.	9 lbs.
		Sago,	.	.	.	.	8 —
		Rice,	.	.	.	.	16 —
		Pearl-barley,	.	.	.	.	16 —
		Soap,	.	.	.	.	3 —
		Soft sugar,	.	.	.	.	64 —
		Portable-soup,	.	.	.	.	25 —
Packages.	{	Lemon-juice,	{	Cases,	.	.	1 No.
				Bottles,	.	.	18 —
	{	Tin-canisters for	{	Chest for calico, &c.	.	.	1 —
				Chest for grocery,	.	.	1 —
				Boxes for portable-soup,	.	.	0 —
				Tea,	.	.	1 —
				Sago,	.	.	1 —
				Rice,	.	.	1 —
	{	Cask for sugar,	{	Pearl-barley,	.	.	1 —
				Portable-soup,	.	.	1 —





*Proportions of Bedding, Lemon-juice, and Necessaries, for a Cutter, &c.*

To be completed annually by survey.	Sheets,	.	.	.	.	.	none.	
	Pillows,	.	.	.	.	.	do.	
	Night-caps,	.	.	.	.	.	do.	
	Hair-beds,	.	.	.	.	.	do.	
	Lemon-juice,	.	.	.	.	.	9 galls.	
	Calico,	.	.	.	.	.	20 yards.	
	Welch flannel,	.	.	.	.	.	10 —	
	Lint,	.	.	.	.	.	1 lb.	
	Tourniquets,	.	.	.	.	.	3 No.	
	Rupture Trusses.	}	Right side,	.	.	.	.	3 —
			Left side,	.	.	.	.	3 —
			Double,	.	.	.	.	3 —
Bed-pans,	.	.	.	.	.	1 —		
Urinals,	.	.	.	.	.	1 —		
Spitting-pots,	.	.	.	.	.	1 —		
Cast-iron sauce-pans.	}	Two quarts,	.	.	.	.	0 —	
		Three pints,	.	.	.	.	1 —	
		One pint,	.	.	.	.	1 —	
To be completed every six months by survey.	Tea,	.	.	.	.	.	4½ lbs.	
	Sago,	.	.	.	.	.	4 —	
	Rice,	.	.	.	.	.	8 —	
	Pearl-barley,	.	.	.	.	.	8 —	
	Soap,	.	.	.	.	.	1½ —	
	Soft sugar,	.	.	.	.	.	32 —	
	Portable-soup,	.	.	.	.	.	25 —	
Packages.	Lemon-juice.	}	Cases,	.	.	.	.	1 No.
			Bottles,	.	.	.	.	18 —
	Chest for calico, &c.	.	.	.	.	.	1 —	
	Chest for grocery,	.	.	.	.	.	1 —	
	Boxes for portable-soup,	.	.	.	.	.	0 —	
	Tin-canisters for	}	Tea,	.	.	.	.	1 —
			Sago,	.	.	.	.	1 —
			Rice,	.	.	.	.	1 —
			Pearl-barley,	.	.	.	.	1 —
			Portable-soup,	.	.	.	.	1 —
Cask for sugar,	.	.	.	.	.	1 —		

N. B. All the preceding tables are calculated agreeably to the practice of the apothecaries' company, viz. 8 drachms to the ounce, 16 ounces to the pound.

☞ When the portable-soup is required to be completed, it should not be issued in quantities less than one canister.

## SECTION IV.

### *Of the mode of furnishing Surgical Instruments to the Navy.*

It will be observed, that in the preceding tables there is not any mention made of surgical instruments. The reason of that omission is this. They are at present furnished at the expense of government to our ships and vessels ; but I would propose that this regulation be abolished, and the one observed in the English navy adopted in its stead. The surgeons and assistant-surgeons of his Britannick majesty's navy, are obliged to provide themselves, *at their own expense*, A SET OF INSTRUMENTS, of the number and quality directed by the commissioners for sick and disabled seamen. This arrangement was made in order to prevent the losses sustained by the service, from the neglect of surgeons of the publick instruments intrusted to their care. As I have more than once seen instances of this culpable neglect in our own service, I cannot help believing that it is absolutely necessary, now the navy is augmented, to adopt the same regulation. In such case, I would recommend the established proportion of instruments for a surgeon and surgeon's-mate, as used in the British service, which I will presently subjoin. The list should be printed in the following form, with a blank certificate at

the bottom. When a surgeon or a surgeon's-mate is ordered to a ship, he should be obliged to exhibit his instruments to the surgeon of one of the U. S. marine hospitals, or to some one of the agents of the board of medical commissioners, and should be required to repair any deficiencies that may be found, either in the number of instruments, or their condition. The surgeon who examines them should then enter in the appropriate columns, specifications of the *state* of the instruments, and fill up the blank certificate at the end.

It must not be forgotten, that though the expense of an out-fit of a surgeon or surgeon's-mate, would, according to this regulation, be very considerable; yet the property once purchased, would always be valuable. In case of capture by an enemy's vessel, these instruments (when this regulation of the service is known to the captors) would come under the denomination of the private or personal property of the medical officers, and of course would be respected as such. Under the existing regulation, the instruments being a part of the out-fit of a ship, as much so as her pistols or sabres, they necessarily and justly become the property of the captors.

This regulation would at first bear hard upon surgeons; but the good of the service makes it necessary. Many surgeons would take as much care of publick instruments as their own; but there will always be found some disposed to be neglectful.

*Established proportion of Instruments, &c. to be provided by a Surgeon.*

Established proportion of Instruments, &c. to be provided by a Surgeon.	State of those in possession of the Surgeon of the Ship.			Deficient of the established proportion.
	In good order.	Requiring repair.	Unserviceable.	
Three Amputating Knives.				
One Ditto Saw with spare Blade.				
One Metacarpal ditto with ditto.				
Two Catlins.				
Pair of Artery Forceps.				
Two dozen curved Needles.				
Two Tenaculums.				
Six Pettit's Screw Tourniquets.				
Pair of Bone-Nippers and Turnscrew.				
Three Trephines.				
Saw for the Head.				
Lenticular and Ruginé.				
Pair of Forceps.				
Elevator.				
Brush.				
Two Trocars.				
Two Silver Catheters				
Two Gum Elastic ditto				
Six Scalpels.				
Small Razor.				
Key Tooth Instrument.				
Gum Lancet.				
Two pairs of Tooth-Forceps.				
Punch.				
Two Seton Needles.				
Pair of strong Probe				
Scissars.				
Curved Bistoury with a Button.				
Long Probe.				
Pair of Bullet-Forceps.				
Scoop for extracting Balls.				



*Established proportion of Instruments, &c. to be provided by a Surgeon. (Continued.)*

Established proportion of Instruments, &c. to be provided by a Surgeon.	State of those in possession of the Surgeon of the Ship.			Deficient of the established proportion.
	In good order.	Requiring repair.	Unserviceable.	
Two Probangs.				
Half a Pound of Ligation Thread.				
One Paper of Needles.				
Case with Lift-out.				
Apparatus for restoring suspended animation.				
Set of Pocket Instruments.				
Six Lancets, in a Case.				
Two dozen Bougies, in a Case.				
Two Pint Pewter Clyster Syringes.				
Six small Pewter Syringes.				
Two sets or bundles of common Splints.				
Set of japanned Iron ditto for Legs.				
Twelve Flannel or Linnen Rollers.				
Two 18 tailed bandages.				
Twenty yards of Web for Tourniquets.				
Sixty yards of Tape, different Breadths.				
A Cupping Apparatus, consisting of one Scarificator and six Glasses.				

*U. S. Marine Hospital, at*

I do hereby certify, that in pursuance of the direction of the Board of Medical Commissioners for conducting the Hospital Department of the U. S. naval service, and for providing for sick, hurt, and disabled seamen: I have this day examined the instruments belonging to \_\_\_\_\_ surgeon of the \_\_\_\_\_ and find their state to be as above expressed.

*Surgeon of*

*Hospital.*

*Established proportion of Instruments, &c. to be provided by a Surgeon's-mate.*

Established proportion of Instruments, &c. to be provided by a Surgeon's-mate.	No.	State of those in possession of the Surgeon's-mate of the Ship.			Deficient of the established proportion.
		In good order.	Requiring repair.	Unserviceable.	
Amputating Knives,	2				
Ditto Saw,	1				
Metacarpal Saw with two Blades,	1				
Catlin,	1				
Curved Needles,	12				
Tenaculums,	2				
Tourniquets,	2				
Bone-Nippers,	1				
Trephines,	2				
Head saw,	1				
Lenticular,	1				
Raspatory,	1				
Forceps,	1				
Brush,	1				
Elevator,	1				
Trocars,	2				
Silver Catheters,	2				
Elastic Gum Catheter,	1				
Scalpels,	6				
Key Tooth Instrument,	1				
Spare Claws of different sizes,	3				
Gum Lancet,	1				
Tooth-Forceps curved,	1				
— ditto straight,	1				
Punch,	1				
Seton Needle in Scales,	1				
Long Probe,	1				
Bullet-Forceps,	1				
Probang,	1				
Set of Pocket Instruments,	1				
Lancets,	12				
Pewter Syringes,	6				

*U. S. Marine Hospital, at*

I do hereby certify, that in pursuance of the direction of the Board of Medical Commissioners for conducting the Hospital Department of the U. S. naval service, and for providing for sick, hurt, and disabled seamen: I have this day examined the Instruments belonging to

Surgeon's-mate of the  
and find their state to be as above expressed,

*Surgeon of*

*Hospital.*

## SECTION V.

*Of the Mode of making Expenditure Returns of Medicines, &c.*

The next subject for consideration, is the laxity of the necessary checks to abuses that grow from the irregular and unsystematic mode now in use, of furnishing the medical department of our publick vessels.

In the rules and regulations for the government of the navy, under the head of the duties of the surgeon, are the following articles :

“ Stores for the medical department are to be furnished upon his requisition, and he will be held responsible for the expenditure thereof.”

“ He will keep a regular account of his receipt and expenditure of such stores, and transmit an account thereof to the accountant of the navy, at the end of every cruize.”

These are the only restrictions that are laid upon the surgeon, for the just expenditure of hospital stores. The impropriety of furnishing them according to the first of these regulations, I have endeavoured to prove, and I hope the systematick plan of accomplishing the same purpose, by *established proportions* of medicines and comforts, and by the direction of a board of medical commissioners, will not be deemed unworthy of notice. It now remains for me to suggest some better regulations, for ensuring the faithful appropriation of the articles furnished for the sick. In the first place, this regulation just quoted, faulty as it is, respecting the rigid check it should impose, is not executed. Five years spent in the service have familiarized me with its usages ; and I can confidently assert, that this rule is

not obeyed. In fact, it is not required of surgeons at the department, to make such expenditure returns, and from long disuse, the regulation seems to have been forgotten ; and, if ever noticed, is only when the surgeon chances to cast his eye over the code of regulations respecting his duties. There are few, if any, surgeons afloat, who think it incumbent on them to transmit to the navy department, any account of the expenditure of stores ; and as to medicines, the rules of the navy do not require any account to be given of the expenditure of them—as if their value is so inconsiderable, that the embezzlement, or wasteful use of them, deserved not any consideration. I cannot, however, but look on this subject as a matter of great moment—convinced as I am, that until more vigorous means are enforced, of obligating the surgeon to make a conscientious appropriation of the medicines, stores, &c. under his charge, the publick treasury will be subjected to very unnecessary and unjust demands, and the sick must inevitably suffer. Not but what I am fully persuaded that most of the surgeons of the navy do now, even without any obligation scarcely to be correct, appropriate their necessaries and medicines to their proper uses—yet this is no argument against the expediency of adopting more strict regulations than at present exist. Those who are upright and faithful without checks, can have no objection to be bound by rigid rules—those who are otherwise, may be forced to correctness. To correct these abuses, then, I would propose,

First, 'That the surgeon be held responsible for every article, &c. &c. for which he receipts to any one of the agents of the board of commissioners—and that the responsibility be virtually enforced and maintain-

ed by proper rules, the observance of which shall on no account be dispensed with.

Secondly, That he be not suffered to condemn, of his own accord, any medicines or stores, in however small quantities. That when any articles belonging to his department are deemed by him unfit for use, he shall report such defects to his captain, if at sea, or to the agents of the medical commissioners, when in port. A survey should then be directed to be held by a sufficient number of surgeons, on the damaged or useless articles ; and *their* report alone shall authorize the destruction of such articles.

I would propose that printed blanks, of the form following, be furnished by the board of commissioners, to the surgeon of every vessel, who should fill up and execute the accompanying oath, when he returns them to the agents of the board of commissioners.

The surgeon should be required to return these expenditure accounts to the agents of the board of commissioners of the port at which the vessel he belongs to may arrive, after a cruize. And he should not be permitted to proceed to sea again, without having fulfilled this regulation.

In consequence of these blanks being printed and furnished to the surgeons of ships, &c. an inducement will be held forth to them for keeping correct accounts ; and when returned into the office of an agent of the medical commissioners, they can be regularly filed and preserved as office papers. A strict conformance to this rule should on no account be dispensed with.



*Account of the Receipt and Expenditure of Medicines and other Articles, on board the*  
*U. S. Ship*  
*between*      *day*      *Guns,*      *and this*      *Captain,*      *Surgeon,*

Names of Medicines, &c.	Remaining on charge from last account, or received from predecessor.	Received since.			Total.	Expenditure.	Returned into store.	Remains per the Survey. 181
		At	At	At				
		181	181	181				
MEDICINES AND UTENSILS.								
Acid. vitriol. dilut.	lb. oz. dr.	lb. oz. dr.	lb. oz. dr.	lb. oz. dr.	lb. oz. dr.	lb. oz. dr.	lb. oz. dr.	lb. oz. dr.
Adip. suilæ, p. p.								
Aloes socotorine,								
Antimon. tart. pulv.								
Aq. litharg. acet.								
Argent. nitrat.								
Calomel,								
Camphor,								
Cera flav.								
Cerat. lap. calam.								
Cerus. acetat.								
Cinchon. pulv.								
Confect. aromat.								
Crem. tart. p. .								
Creta, p. p. .								
Cuprum vitriol,								
Digital. pur. pulv.								

Emplast. cantharid.  
 cera. C  
 litharg com.  
 cum hydr.  
 Extract. colocynth. c  
 Flor. chamæmel,  
 sulph.  
 Gum. ammon. gutt.  
 arab.  
 guaiac. .  
 Hydrang. niur. rub.  
 muriat.  
 c Jalap pulv. .  
 c Ipecac pulv. com.  
 Kali, p. p .  
 Liq vol. C. C.  
 Magnes vitriol,  
 alb.  
 Mel. acetat. .  
 Natron vitriol,  
 Niur. purif. .  
 Ol. lini. .  
 menth. pip.  
 olivar. .  
 ricini. .  
 terebinth. .

*Account of the Receipt and Expenditure of Medicines, &c. (Continued.)*

Names of Medicines, &c.	Remaining on charge from last account, or received from predecessor.	Received since.		Total.	Expenditure.	Returned into store.	Remains per the Survey. 181
		At 181	At 181				
Opium, .	lb. oz. dr.	lb. oz. dr.	lb. oz. dr.	lb. oz. dr.	lb. oz. dr.	lb. oz. dr.	lb. oz. dr.
Ras quassiæ, .							
Resin flav. .							
Rhabarb pulv.							
Sal. vol C. C.							
Semen lini, .							
Senna, .							
Sperm. ceti. .							
Spirit lavend. comp.							
Tinct. scillæ, .							
ferri muriat.							
Unguent ceræ, .							
hydr fort,							
nitratum,							
resin flav.							
Zinc. vitriol. .							
Zinziber. pulv.							
Bolus knives, .							
Tiles, .							

Bottles (half pint),	
Gallipots, in sorts,	
Pewter measures,	
Mortars and pes-	
tles (marble),	
Ditto (metal), .	
Needles, com. ch.	
Scales and	
weights, sets,	
Spatulas, .	No.
Funnels, .	
Sponge, .	oz.
Chests & boxes,	No.
Sheets, .	pairs,
Pillows, .	No.
Night-caps, .	
Beds, .	
Linen, .	yards,
Calico, .	
Welch flannel,	
Lint, .	lb.
Soap, .	
Bed pans,	No.
Urinals,	
Spitting-pots, .	
Tourniquets, .	
Trusses,	
Lemon-juice,	galls.

## Account of the Receipt and Expenditure of Medicines, &amp;c. (Continued.)

Names of Medicines, &c.	Remaining on charge from last account or r. received from pre- decessor.	Received since.			Total.	Returned into store.	Remains per the Survey 181
		At 181	At 181	At 181			
Ditto (cases), No							
Ditto (bottles),							
as Vitriol. acid, lb							
for Boxes for do No.							
as Nitre pulv lb.							
for Boxes for do. No.							
Tea, . . lb.							
Sago, . . .							
Rice, . . .							
Pearl-barley, .							
Soft sugar, .							
Portable-soup,							
Brandy, . . galls.							
Porter, . . bottles,							
Gin, .. galls.							
Port wine, .							
Madeira or white wine. . .							

All articles mentioned in this list not specified in the tables of *proportions*, such as wine, porter, &c. I suppose to have been issued by the Purser, on order of the Surgeon; for these articles *ought* to be in charge of the Purser, and not the Surgeon.



*Note.* The Surgeon is to pay every possible attention to the preservation of the different packages; those of concentrated vitriolic acid, and the lemon juice, as well as the different cases, bottles, jars, &c. are articles of considerable expense, and must be duly accounted for, previous to certificates being granted; they are to be delivered to the Agents of the Board of Medical Commissioners, in the same manner as the other remains, whose receipts for the same must be transmitted with this account.

The quantity of wine, over and above the ship's allowance, received and issued during the period of this account, is to be duly noted in the account.

When the remaining medicines and articles are delivered to a successor, he is to sign a receipt for them as under.

Received, the	181	of Doctor	my predecessor, in the
U. S. ship	the remaining articles mentioned in the above said account.		

*Surgeon.*

This Deponent, Surgeon of the U. S. ship the voluntarily maketh oath, that the above account of the receipt and expenditure of the different articles of medicines, stores, &c. is just and true; and this deponent further maketh oath, that the amount of the bills drawn by him for Surgeon's necessities, was faithfully expended for the said service; and that the different articles purchased, as well as the supplies received from the Agents of the Board of Medical Commissioners, were faithfully supplied to the people entitled to the benefit thereof, and not expended for any other use whatever; and he further maketh oath, that he hath not, either directly or indirectly, received any emolument or profit from any person concerned in supplying the said medicines, stores, and necessities; this deponent also further maketh oath, that the different articles of diet supplied to the sick by the Purser, in lieu of their salt provisions, were all good in their kind, and administered to the patients in the full proportions contained in the demands given to the Purser, to the best of his knowledge and belief.

Sworn this	day of	181
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## SECTION VI.

*On the propriety of abolishing the Surgeons' five-dollar perquisite from the navy.*

In entering on the consideration of this subject, I am not insensible of the unpopularity of such a proposition as I shall begin it with, viz. to expunge this perquisite from the navy altogether. I am aware that the surgeons generally, think their pay sufficiently inadequate to their arduous service, already, without further diminishing their emoluments by abolishing this perquisite. But I feel persuaded that the most considerate of them will allow with me, that an augmentation of pay by such means, is neither agreeable to the feelings, nor perhaps strictly consonant with justice.

By the *five-dollar perquisite*, I mean that fee or remuneration which it is customary for surgeons of our ships and hospitals to receive for the cure of the venereal patients, from the pursers attached to such ships or stations, who charge the amount against the respective persons who have unfortunately contracted the disease. It is true, there is no established article of the navy laws, to authorize the payment of such sum. But immemorial custom has given this regulation the importance and effect of a law. It is still said, that it is optional with the foremastman to sign the order for the deduction of this sum of five dollars from his pay, to be given to the surgeon; but an intimate acquaintance with the opinions of the seamen in our navy on this subject, enables me to declare, that most of them believe it a compulsory rule—at least they think it so far so, as to entertain the idea, that if

they refuse to pay this sum to the surgeon, they forfeit his good opinion, and ensure his displeasure. This a generous hearted tar would ever be desirous of avoiding, and, of course, however unjust he might really deem such a custom as that which binds him to the performance of an act, that he perhaps would not voluntarily execute, he nevertheless believes it incumbent on him to follow the general usage. It is true, that but few of the sailors do refuse the payment of this perquisite to the surgeon, yet I know that some will do it. It has been urged in favour of this regulation, that it deters the sailor from an indulgence in those excesses, which give origin to the disease. Whoever believes this can know nothing of the character and disposition of this class of men. Sailors are thoughtless, improvident, and venturous. No experience of the fatal consequences of pleasures attended with present revelry and mirth, will ever operate sufficiently on their minds to cause any moderation in the indulgence of the like excesses. They think only of the present, and are never regardful of consequences that are even a few hours distant. How then can it be reasonably supposed, that these men, reckless as they are by disposition and by habit, will ever be deterred from the commission of pleasurable excesses, from a fear of incurring a penalty so inconsiderable? This argument, therefore, can have no possible tendency to establish the inexpediency of abolishing the unjust contribution of which I am speaking. One fact I am acquainted with, however, which goes far to prove the propriety of expunging this regulation from the naval service. It is to surgeons of the service well known, that seamen sometimes, but more frequently landmen and marines, do frequently conceal their complaints for fear of being obliged to *pay the doctor* for their

cure. This happens till the disease assumes a serious, and not unfrequently a dangerous aspect. They will purchase for a trifle, on shore, drugs enough to ruin them, or do them at least essential injury, or apply to the loblolly-hoy, or some man on board who pretends to know how to cure the disease, rather than make known their complaint to the surgeon. Can any thing be more destructive to the health of the men, and of course to the good of the service, than a regulation that induces such conduct and such consequences?

How then shall this error be corrected? A custom similar to this existed formerly in the British navy—fifteen shillings sterling were allowed to the surgeon for the cure of this disorder, which sum, like our *five-dollar perquisite*, was deducted from the pay of the men. A conviction of the fatal consequences to the service, such as I have above specified, by the continuance of this rule, induced the rulers of the medical department to alter it. Accordingly eight pounds sterling per annum for every hundred men of the complement, were allowed to the surgeon by *government*, as a substitute for the abolished perquisite. The consequence was, that all the ill effects of the first regulation were prevented.

Let us then imitate their example, and allow the surgeons of the navy a sufficient compensation for their trouble. It is right and just that they should be remunerated for the cure of this disorder; but I do contend that it is neither just nor wise to cause this remuneration to come from the foremastman. I pretend not to specify any sum, which shall be a just compensation to the surgeon for the abolishment of the present perquisite, but leave that to those whose more immediate province it is. All I think it necessary to do, is to make a fair exposition of the bad consequences of a re-

gulation that should be done away, and to suggest the means by which its object might be accomplished in a manner more agreeable to the surgeon, more consonant with the good of the service, and more just and wise. .

## SECTION VII.

### *Of the duties of a Surgeon and Surgeon's-mate in the Navy, on ship-board.*

The duties of a surgeon, as detailed in the navy regulations, would be, if the regulations I have suggested in the foregoing pages are ever adopted, not sufficiently definite. I would propose that they be amended as follows :

It shall be the duty of the surgeon,

1. To inspect and take care of the necessaries sent on board for the use of the sick men ; if not good, he must acquaint the captain ; and he must see that they are duly served out for the relief of the sick.

2. To visit the men under his care twice a day, or oftener, if circumstances require it ; he must see that his mates do their duty, so that none want due attendance and relief.

3. In cases that are difficult, he is to advise with the surgeons of the squadron.

4. To inform the captain daily of the state of his patients, by entering their names on a printed blank sick-report of the form following.





These blanks should be furnished in sufficient quantities to the ships, by the agents of the board of medical commissioners, and when filled up by the surgeon for the captain, should be regularly filed.

5. When the sick are ordered to a hospital, he is to send with them to the surgeon, an account of the time and manner of their being taken ill, and how they have been treated.

6. But none are to be sent to sick-quarters, unless their distempers, or the number of the sick on board, are such, that they cannot be taken due care of; and this the surgeon is to certify under his hand, before removal.

7. To be ready with his mates and assistants in an engagement, having all things at hand necessary for stopping of blood and dressing wounds.

8. To keep a day-book of his practice, containing the names of his patients, their hurts, distempers, when taken ill, when recovered, removal, death, prescriptions, and method of treatment, while under cure.

9. From this book he is to form two journals, one containing his physical, and the other his surgical practice.

10. He shall keep an exact expenditure account of medicines, stores, &c. by filling up the blank sheets given him by the agents of the board of commissioners who furnished the ship, and shall execute the oath accompanying them. He shall then return them into the charge of the agent of the port at which the vessel he is attached to may arrive.

11. To make out a semi-annual return to the captain of the ship, and one to the board of medical commissioners, in the following form :

*Semi-annual return of patients admitted on the sick-list, with what diseases, when discharged for duty, sent to the Hospital, or cured on board, the U. S. ship*  
*day of* *of* *guns,* *to the* *duty of*  
*Surgeon; from the*  
*Commander,* *following, inclusive.*

No.	Names of Patients.	Rank or station on board ship.	When admitted.	Diseases.	Discharged for duty.	Died on board.	Sent to hospital.	Died in hospital.

Such a return it was always my practice to make out every six months, while I was in the ship-service, as will be seen by the following letter :

*Frigate United States, Norfolk, Virg. Dec. 26, 1809.*

SIR,

You will receive with this, a semi-annual return of patients admitted on the sick list, discharged cured for duty, died, or sent to the hospital, on board the United States.

Though it has, I believe, never been customary to make out such a return, I have done it, because I supposed it would prove satisfactory to the commander of a vessel, to see at one view every six or every three months, the state of his crew as respects health. Should you deem it so, I will continue the practice, either half-yearly or quarterly.

I am, sir, respectfully,

Your obedient servant,

WILLIAM P. C. BARTON.

STEPHEN DECATUR, ESQ.

This plan seemed to meet the approbation of those officers who were made acquainted with it ; and as I do really think it would be a good regulation, I recommend the adoption of it.

### *Of the Duties of a Surgeon's-mate.*

As there are no duties specified or detailed for a surgeon's-mate in the navy regulations, and as I know that many of these officers, upon first entering the service, are often at a loss to know what are the functions of their office, I will propose the following detail of duties for the surgeon's-mates, and hope they may not be deemed unworthy of insertion in the code of regulations for the navy.

*Detail of the duties and offices of a Surgeon's-mate of the Navy.*

1. The surgeon's-mate is to visit the sick-bay every morning before eight o'clock, to see if the sick are in want of any thing before breakfast, and also every night, previously to his turning-in, to see that they are provided with all necessaries prescribed for them. He is to bleed, to dress all ulcers and wounds daily, or oftener, if required by the surgeon. He is to give all medicines ordered for patients seriously ill, with *his own hands*, and see that all other patients have their medicines properly administered, at the specified hours. He is to put up *all* the prescriptions of the surgeon, and to keep the furniture of the cock-pit clean, and the surgical instruments in perfect order.

2. He is to prescribe for the sick in the absence of the surgeon, and to report all unfavourable changes in the diseases of the patients, immediately to him. He is to be responsible to the surgeon for the expenditure of all hospital-stores and comforts committed to his charge. He should keep a daily account of the expenditure of these, and render a *monthly return* of the aggregate consumption of each individual article to the surgeon.

3. He is to give out to the loblolly-boy, all such liquors and comforts as are prescribed for the sick, and never suffer him to go into the store-room for the purpose of getting them. He is not, *on any pretence*, to loan to any person or persons, a single article of hospital-stores, nor any liquors; and he is strictly enjoined to be *economical* in the *necessary expenditure* of these costly articles.

4. He is on *no account* (unless unable to attend to duty



himself) to commit the dressing of ulcers and wounds to the *loblolly-boy*, nor the men themselves, but is required to dress all sores, however inconsiderable, *himself*.

5. He is to see that the ship's coppers are kept perfectly clean; for this purpose he should inspect them daily, at such times as they are cleansed by the cook. Should the cook neglect to keep them wholesome and pure, he is to report such neglect *in person* to the officer of the deck.

6. He is to see that the *loblolly-boy* dresses blisters properly and with tenderness; that he discharges his duty faithfully; and that he humanely attends to the wants and necessities of the sick. He is to take particular care that he does not expend the provisions and liquors put into his charge, for improper purposes, and that he does not give them to other than such sick persons as they were ordered for. He is to see that he has the sick men shaved at least twice a week, and washed daily—and that he keeps them otherwise clean and comfortable.

7. He is to see that the *loblolly-boy* rings the bell fore and aft the berth and gun decks, to collect the sick men to the after part of the half-deck, at such times as the surgeon shall denote. When the sick are all collected, he is to have the *dressing-board* brought up to the half deck, and then report *in person* to the surgeon, *that the sick men are ready for his attendance*.

8. He is required to report *in person* neglects of duty or attendance on the part of the *loblolly-boy*, to the officer of the deck, that he may be punished.

9. He is *to attend rigidly to these instructions*, and, above all, should bestow his attentions with kindness and humanity on the sick.

## SECTION VIII.

*Of the expediency of augmenting the pay of navy Surgeons and Surgeon's-mates.*

The pay of a surgeon in the navy of the United States, is 50 dollars per month, and two rations per day, which are never drawn in kind, but in their value in money, that is, 40 cents per day, making the entire amount of pay and emoluments 62 dollars per month.

The pay of a surgeon's-mate is 30 dollars per month, and two rations per day, which are generally drawn in their value in money; so that the pay and emoluments of officers of this grade are 42 dollars per month.

Is the pay then of surgeons and surgeons'-mates sufficiently liberal? Is it adequate to the value of their services? When it is taken into consideration, that this pay is not, as in the British navy, augmented by every year's service, and when it is also remembered how inconsiderable a portion of prize-money these officers are entitled to, I cannot help believing that every reasonable man acquainted with the nature of the service, will without hesitation, answer these questions in the negative. I can declare, without fear of contradiction, that the officers of the navy generally deem the pay of surgeons and surgeons'-mates, particularly the first, much too inconsiderable.—Why is it not at least equal to the pay of surgeons and surgeons'-mates of the army? Why this invidious distinction? Are not officers who encounter the disasters, and submit to the privations of a sea-life, equally entitled to liberal remuneration with those who undergo no such

toil and exile from all that can render life comfortable or happy? Are the duties of an army surgeon more arduous? Let those who have been in the habit of practising on ship-board, and who at the same time are acquainted with the land-service, answer this question. Let the pay of the naval medical officers be augmented to that of officers of their grade in the army, and let, as I have before suggested, some compensation be added by government for the cure of venereal patients. An inducement will then be offered to surgeons to continue in the service. This inducement I know is now wanting. The medical officers of the navy, one and all, believe their pay an insufficient remuneration for their labour—this is not from selfish motives. Those who have left the service, and have no idea of again entering it, and whose interests are therefore neither incorporated with, nor dependant on any usages in the navy, are loudest in asserting the necessity for reform here. I do hope, therefore, that the discussion of this subject before Congress will not be far distant, and that when such an event takes place, a demand will be made for the opinions of the flag officers and captains in the service, as to the expediency of increasing the pay. If it be left to *their* decision to affix the sum that may be considered as a fair and just equivalent to the services of the medical officers, the surgeons need not tremble for the issue.

Should this subject ever be brought under the cognizance of the naval committee, I would wish the members composing it to be informed of the regulations respecting the pay of the medical officers of the British navy. I shall therefore subjoin a minute detail of them, in the hope that they will give some hints for the reform I have proposed. They are as follow:

*Particulars of such part of his majesty's Order in Council of the 23d January, 1805, for improving the situation of the Medical Officers of the Navy, as relates to such Officers serving on board Ships.*

It is ordered, that the number of assistants heretofore called "Surgeon's-mates," to be allowed to the surgeons of his majesty's ships, shall in future be regulated as follows :

First rate, . . . . .	3	Assistants
Second rate, . . . . .	3	ditto
Third rate, . . . . .	2	ditto
Fourth rate, . . . . .	2	ditto
Hospital ships, . . . . .	3	ditto
And all other ships entitled according to the existing regulation to bear mates, . . . . .		
	1	ditto

That no person shall, in future, be appointed to serve as an assistant to the surgeon of any of his majesty's ships, who shall not have been found qualified on examination to serve as surgeon, or first assistant : that the pay of assistants so qualified shall be 6s. 6d. a day, besides the ship's provisions ; with half-pay when reduced, at the rate of 2s. per day, provided they shall then have served two years subsequent to the date of this regulation, and 3s. per day, if they shall have served three years from that date. That such assistants shall be required to furnish themselves with such surgical instruments as the commissioners for sick and wounded seamen shall direct ; and that they shall be rated on the ship's books, where the complement admits of more than one, according to their seniority on the list to be kept by the sick and wounded board.

Whereas there are many surgeon's-mates now serving on board his majesty's ships, who have not obtained, and who may not for some time have an opportunity of obtaining the qualification before required, it is directed that such as serve as first or second mates or assistants, shall be allowed 5s. per day, and those rated third mates, or assistants, 4s. per day.

These three classes or assistants shall not be required to pro-

vide instruments, nor shall they be allowed half-pay ; but they shall nevertheless, on proving themselves duly qualified, be placed on the same list with the other assistants, from the date of the first appointment they may receive after such qualification, and commence the time to be reckoned from half-pay from such appointment.

All surgeons of the navy who shall not have served in the whole six years, of which not more than three years time as hospital-mate or assistant-surgeon shall be allowed, shall receive, when employed, a full pay of 10s. per day ; and when not employed, a half-pay of 5s. per day.

Surgeons of ships, in active service, after having served six years, of which not more than three years time as hospital-mate or assistant-surgeon shall be allowed, shall be paid 11s. per day ; their half-pay to be 6s. per day.

After having served ten years, allowing not more than three years as hospital-mate or assistant-surgeon, the surgeon's full pay shall be augmented to 14s. per day, his half-pay to remain at 6s. per day.

Surgeons of receiving-ships, slop-ships, convalescent-ships, prison-ships, and all other ships, except hospital-ships, employed only in harbour duty, shall be allowed full pay, 10s. per day, with half-pay according to the time of their service.

Surgeons appointed to hospital-ships shall receive a full pay of 15s. per day, unless in cases where, by the length of their service, they may have become entitled to a superior rate of payment ; their half-pay to be regulated, as in the case of surgeons of other ships, by the length of their service.

Every surgeon in the navy, excepting surgeons serving on board receiving-ships, slop-ships, convalescent-ships, or any other ships than hospital-ships, employed only on harbour duty, shall, after twenty years service on full pay, including not more than three years time as hospital-mate or assistant-surgeon, be allowed 18s. per day : and after such length of service, all surgeons, in whatever ships they may have served, shall have a claim to retire on a half-pay of 6s. per day ; but if the cause of their retirement shall be ill health contracted in the service, and it shall be so certified by the commissioners of sick and wounded seamen, the rate of half-pay on such retirement, after twenty years actual service, shall be 10s. per day.



Every surgeon in the navy, after thirty years service, on full pay, including not more than three years as hospital-mate or assistant-surgeon, shall have an unqualified right to retire on half-pay, at the rate of 15s. per day.

That medicines and utensils shall be provided for the service of his majesty's ships and vessels, at the expense of government, in such proportions as shall from time to time be arranged by the commissioners for sick and wounded seamen; but the surgeons shall be required to provide, at their own expense, such surgical instruments as shall be judged necessary by the said commissioners.

No person shall be appointed physician to a fleet or an hospital, who shall not have served as surgeon at least five years; the daily pay of a physician, on his first appointment, to be one guinea, his half-pay half-a-guinea.

When he shall have served three years as physician to a fleet or an hospital, his full pay shall be one guinea and an half per day, his half pay 15s per day

The full pay of a physician, who shall have served in that capacity more than ten years, shall be two guineas per day, his half-pay one guinea per day.

That physicians, when a residence is not provided for them, shall be allowed one guinea per week lodging-money.

To the widows of physicians and surgeons, such a pension shall be allowed as the lords commissioners of the admiralty shall think it right to grant.

None of the officers before mentioned, who shall retire from their respective employments without the approbation of the commissioners for sick and wounded seamen, or who shall refuse to serve when called on, if judged capable of service, shall be allowed to receive half-pay, nor shall their names remain on the naval list. Their widows will not in consequence be entitled to any pension.

No officer, of whatever description, shall be entitled to any of the advantages arising from this regulation, who shall not have served during the present war, or until he shall have satisfied the commissioners for sick and wounded seamen of his inability to serve. but such persons shall be permitted to remain on the same establishment on which they may now respectively happen to be.

## SECTION IX.

*Of the propriety of establishing the Rank of navy Surgeons.*

It will be a matter of surprise to those who are ignorant of the fact, to learn : that at this late period of our naval establishment, the rank of a grade of officers confessedly among the most important of those who compose the navy, is not yet determined.

The inconveniences and disadvantages of this omission, are well known to the medical and other officers of the service. I have sorely experienced them ; and would venture to assert, that every surgeon in the navy has at some period or other of his service, also felt the effects of his indefinite standing as respects other officers of the navy.

In the British sea-service, surgeons rank with lieutenants of the navy and captains of the army, and they are subordinate only to the sea-lieutenants of the ship to which they are attached. In the French service, a similar arrangement is established. Why then should the surgeons of the navy of the United States, inferior to none in the world so far as it goes, be suffered to experience the mortification arising from a want of so necessary a rule ? If it is ever expected that men of talents and education, who have spent much of their time in acquiring such a knowledge of a difficult, a laborious, and, to most persons, a painful profession, as will enable them to serve their country with advantage, will enter and continue in the naval service : the rank of surgeons *must* be established. And this rank should

be sufficiently respectable to give them a consequence among sea-officers, that they now have not.

For my part, I cannot but believe it essentially necessary for the welfare of the navy, that this establishment of rank be immediately made. The error is old enough, and sufficiently productive of bad consequences, to demand a quick and efficient reform. When this is the case, we shall not have surgeons who have just continued long enough in the service to be well acquainted with the nature of sea-duty, and to be of course the better prepared to benefit it by their experience, becoming disgusted with their unimportant situation, and leaving a service productive neither of emolument nor increasing respectability. I do hope therefore that this subject will claim the attention which it so eminently merits. Persuaded as I am that when naval surgeons are placed upon a more respectable footing than that they now hold, the expediency of the regulation will be manifest to all, I must strenuously urge the establishment of rank, as I have done the necessity for an augmentation of pay.

## SECTION X.

*Of the expediency of altering the present Ration.*

Previously to entering on a consideration of this subject, I will exhibit some of the French rations—the English naval ration—the ration proposed by Mr. Turnbull, a navy-surgeon—and the existing ration of our sea-service. A comparative view of the component parts of these different bills, will enable me to explain more clearly the reasons that I think exist for altering our ration, at least the liquid portion of it.

*Rations allowed in the French service.**Ration of a Workman.*

Nature of Provisions.		Former Weights and Measures.	
Fresh bread,	. . .	24	ounces.
Wine,	. . .	$\frac{3}{4}$	of a pint.
Beer and cider,	. . .	$1\frac{1}{2}$	pints.
Fresh meat,	. . .	8	ounces.
Green vegetables,	. . .	4	deniers.
Cod-fish,	. . .	4	ounces.
Cheese	{ Dinner,	. . .	3 ditto.
	{ Supper,	. . .	2 ditto.
Rice,	. . .	2	ditto.
Dry vegetables,	. . .	4	ditto.
Sweet oil	{ for cod-fish,	15 lb.	per hundred weight.
	{ rice,	10 —	ditto.
	{ vegetables,	5 —	ditto.
Vinegar	{ for cod-fish,	16 pints,	ditto.
	{ rice,	5 —	ditto.
	{ vegetables,	$2\frac{1}{2}$ —	ditto.

Nature of Provisions.	Former Weights and Measures.
Salt, . . . .	130 lb. per 3000 rations.
Fire-wood, . . . .	look at the description following.
Candles, . . . .	9 lb per month for every hundred men.

*Rations when on a Cruize.*

Flour or biscuit, . . . .	18 ounces.		
Fresh bread, . . . .	24 ditto.		
Wine, . . . .	$\frac{3}{4}$ of a pint.		
Brandy, . . . .	$\frac{3}{6}$ ditto.		
Beer or cider, . . . .	1 $\frac{1}{2}$ pints.		
Salt pork, . . . .	6 ounces.		
Salt beef, . . . .	8 ditto.		
Cod-fish, . . . .	4 ditto.		
Cheese	{ Dinner, . . . .	3 ditto.	
	{ Supper, . . . .	2 ditto.	
Rice, . . . .	2 ditto.		
Vegetables, . . . .	4 ditto.		
Sweet oil	{ for cod-fish, . . . .	15 lb per hundred weight.	
	{ rice, . . . .	10 — ditto.	
	{ vegetables, . . . .	5 — ditto.	
Vinegar	{ cod fish, . . . .	16 pints per hundred weight.	
	{ rice, . . . .	5 — ditto.	
	{ vegetables, . . . .	2 — ditto.	
	{ To sprinkle for the benefit of health, . . . .	7 pints per month for hundred men	
Mustard-seed, . . . .	2 lb. 8 oz. ditto	ditto	
Salt, . . . .	130 — ditto	ditto	
Pepper, . . . .	$\frac{1}{2}$ ounce per hundred rations.		
Fire-wood, . . . .	Look at the description following.		
Candles, . . . .	9 lb. per month for hundred men.		
Lamp-oil, . . . .	9 — ditto	ditto.	
Wicks, . . . .	1 ounce for one month's cruize.		
Preserved sorrel, . . . .	$\frac{1}{2}$ ounce per man.		
Sour-cROUT, . . . .	1 ounce ditto.		
Mutton	{ in Brest, St. Ma-		
	{ loes, L'Orient, . . . .	6 — ditto.	
	{ in the other sea- ports, . . . .	4 — ditto.	



Nature of Provisions.	Former Weights and Measures.
Broth prepared in cakes,	$1\frac{1}{2}$ ounces per man.
Chickens, . . .	$\frac{1}{3}$ part.
Eggs, . . .	4
Prunes, . . .	15 lb. per hundred men.
Butter, or preserve, .	10 — ditto.
Sugar, . . .	6 — ditto.
Grains, . . .	9 — ditto.
Hay, . . .	50 — per sheep.
Bran, . . .	15 — per three thousand rations.
Butter, { for codfish,	$\frac{1}{4}$ —
instead of { rice, .	$\frac{1}{6}$ —
Sweet oil, { vegetables,	$\frac{1}{8}$ —

*Rations of the sick at sea.*

White bread, . . .	20 ounces.
Egg, . . .	1
Mutton, . . .	8 ounces.
Chicken, . . .	$\frac{1}{7}$ part.
Mutton, instead of chicken,	4 ounces.
Prunes, . . .	4 ditto.
Rice, . . .	2 ditto.
Butter, or sugar, . . .	$\frac{1}{2}$ ditto.

*Rations of the Artillery.*

Fresh or soft bread, . . .	26 ounces.
(The rest like the ration for a workman.)	

*Ration of Prisoners of War.*

Fresh or soft bread, . . .	16 ounces.
Fresh meat, . . .	16 ditto.
Wine, . . .	$\frac{1}{4}$ pint.
Beer or cider, . . .	$\frac{1}{2}$ —
Fire-wood, . . .	Look at the description, on this head.

*Ration of a Galley-slave, in prison.*

Fresh or soft bread, . . .	30 ounces, and water.
F f	

*Ration of a Galley-slave, at work.*

Nature of Provisions.	Former Weights and Measures.
Fresh or soft bread,	30 ounces.
Biscuit, . . .	23 ditto.
Cheese, . . .	1 ditto.
Wine, . . .	$\frac{2}{3}$ of a pint.
Beer or cider, . . .	$1\frac{1}{3}$ ditto.
Vegetables, . . .	4 ounces.
Sweet oil, . . .	1 lb. per hundred rations.
Salt, . . .	20 — ditto ditto.

*Ration of Galley-slaves, without work.*

Fresh or soft bread, . . .	30 ounces.
Biscuit, . . .	23 ditto.
Vegetables, . . .	4 ditto.
Sweet oil, . . .	9 lb. per hundred men.
Salt, . . .	21 — per thousand rations.

*Ration of Galley-slaves, invalids.*

Fresh or soft bread, . . .	24 ounces.
Wine, . . .	$\frac{1}{2}$ pint.
Fresh meat, . . .	8 ounces.
Green vegetables, . . .	6 deniers.
Salt, . . .	21 lb. per thousand rations.

*Daily allowance for one Man in the British naval service.*

Days.	Bread.	Beer.	Beef.	Pork.	Peas.	Oatmeal.	Sugar.	Butter.	Olivesc.
Sunday, . . .	1 lb.	1 gillons	..	1 lb	1 half pint	.. half pint	oz.	oz.	oz.
Monday, . . .	1	1	..	..	..	1	2	2	4
Tuesday, . . .	1	1	2	..	..	..	..	..	..
Wednesday, .	1	1	..	..	1	1	2	2	4
Thursday, . .	1	1	..	1	1	..	..	..	..
Friday, . . .	1	1	..	..	1	1	2	2	4
Saturday, .	1	1	2	..	..	.	..	..	..
Weekly proportion to each man,	7	7	4	2	4	3	6	6	12

N. B Flour and suet are issued in lieu of half the beef—in foreign stations, when the beer is all served. pint of spirits, or a pint of wine, is issued in lieu—and when the butter and cheese are out, the men are in general served with cocoa.

*Scheme of Diet for the more effectual Preservation of the Health of Seamen,  
by Mr. Turnbull.*

## DINNER.

Days.	Beef.	Pork.	Rice.	Portable soup.	Flour.	Suet.	Plumbs	Peas.	Butter.	Cheese	Sour-crust.
	lb.	lb.	oz.	oz.	lb.	lb.	lb.	Pint.	oz.	oz.	lb.
Sunday, . . .	..	1	4	..	..	..	..	..	2	..	..
Monday, . . .	..	..	..	4	..	..	..	$\frac{1}{2}$	2	4	..
Tuesday, . . .	2	..	..	..	..	..	..	..	..	..	$\frac{1}{2}$
Wednesday, . .	..	..	..	..	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{1}{2}$	..	2	4	..
Thursday, . .	..	1	4	..	..	..	..	..	2	..	..
Friday, . . .	..	..	..	4	..	..	..	$\frac{1}{2}$	2	4	..
Saturday, . . .	2	..	..	..	..	..	..	..	2	.	$\frac{1}{2}$

*A Table of the component parts of the ration allowed in the navy of the United States, on the days of the week respectively named.*

DAYS OF THE WEEK.	POUNDS OF				OUNCES OF				HALF PINTS OF			
	Beef.	Pork.	Flour.	Suet.	Bread.	Cheese.	Butter.	Peas.	Rice.	Molasses.	Vinegar.	Spirits.
Sunday, . . .	$1\frac{1}{4}$	..	$\frac{1}{2}$	$\frac{1}{4}$	14	..	..	..	..	..	..	1
Monday, . . .	..	1	..	..	14	..	..	1	..	..	..	1
Tuesday, . . .	1	..	..	..	14	2	..	..	..	..	..	1
Wednesday, . .	..	1	..	..	14	..	..	..	1	..	..	1
Thursday, . . .	$1\frac{1}{4}$	..	$\frac{1}{2}$	$\frac{1}{4}$	14	..	..	..	..	..	..	1
Friday, . . .	..	..	..	..	14	4	2	..	1	1	..	1
Saturday, . . .	..	1	..	..	14	..	..	1	..	..	1	1
	$3\frac{1}{2}$	3	1	$\frac{1}{2}$	98	6	2	2	2	1	1	7

N. B. Whenever any article is issued in lieu of another, the quantity of the substitute should never exceed in value the price of the article for which it is a substitute.



It will be seen that ardent spirits form no part of the preceding foreign rations—but that light wine, beer, and cider, are judiciously allowed for the liquid portion of the aliment. The use of sweet oil, prunes, and eggs, cannot be too highly commended, where they are sufficiently cheap to come within the government price of each ration. When our ships are stationed in the Mediterranean, the sweet oil should be introduced into the ration. I think this article would at all times be preferable to the rancid and impure butter of the American navy-ration. As I have proposed the use of malt-liquor in this ration, I think that when it falls short, a sufficient quantity of wine should be allowed in lieu of it. Cod-fish forms part of the French rations. Why should it not be occasionally used for variety, in our ships? These things are highly deserving our attention on many considerations.

The diet of seamen is at best but little calculated to give due nourishment to the system. The salted provisions, of which it is chiefly composed, contain but an inconsiderable proportion of nutritious matter; and the constant use of them so weakens the tone of the stomach, that it becomes every day more and more unable to perform with the necessary perfection, the office of digestion. Hence it is that the diet has always been considered as the chief cause of the diseases of seamen; and hence it is too, that officers, who for the most part are more attentive to their diet, are seldom afflicted with scurvy. Since it is absolutely necessary that salted meats should form so large a part of the solid ration of a seaman, it is proper that such correctives to their pernicious effects on the constitution, should be combined with their use, as will modify or counteract them. In the present ration of our navy,

whiskey or rum, in the proportion of half a pint per day, forms the liquid portion. One or other of these liquors is mixed with three parts of water, and constitutes what is called by the sailors *three-water-grog*; and the grog thus mixed, is served out at twelve o'clock in the morning, and at four in the afternoon.

It is not necessary in a work of this kind, where it is my intention to avoid as much as possible all technical phraseology, because I design it for the perusal of other besides medical men, to enter into a minute detail of the effects of spirituous liquors on the human system. It is sufficient for me to say, that the drink of the sailor called grog, is highly pernicious to his constitution, destructive of his morals, and productive of insubordination and wickedness. It is a notorious fact, that most of the crimes committed on ship-board, are perpetrated either while the offender is intoxicated, or grow in some way or other out of such disgraceful condition. Besides this, the constant use of this heating and inflammatory liquor, depresses the system, already sufficiently enervated by the use of salted provisions; and it affords no counteracting effect to the consequences of a confinement to a diet of these meats.

For this reason I would propose, that whiskey or rum be expunged altogether from the ration, and BEER substituted in its stead. The anti-scorbutick effects of this liquor are well ascertained, and its nutritive quality equally well known. The advantages it has over spirituous liquor as a drink for seamen, are:

1. It is anti-scorbutick; it will therefore tend to counteract, or at least lessen, the injurious effects of salt provisions on the system.

2. It is highly nutritious and wholesome; it does not therefore vitiate the stomach, or destroy digestion.

3. It prevents the use of bad water, the pernicious

effects of which not even the whiskey can counter-act.

4. It requires very large quantities to induce intoxication.

5. It gives exhilaration to the spirits, not by its immediate effect, but by giving tone and vigour to the system.

6. The constant use of it does not beget an immoderate thirst for it, and of consequence does not so frequently induce intemperance.

7. The habitual use of it is not destructive to the morals.

For these reasons, I think malt-liquor should be substituted in the ration, for whiskey. I will venture to predict, that if this is done, we shall soon hear, as happened in the British navy, the highest commendation of the change.

The bread or biscuit that forms the chief vegetable portion of the ration, is a fruitful source of disease. It not unfrequently, especially when kept long, and loose in the bread-room, or in casks not water-tight, becomes sour, dry, mouldy, or wormy. In this state it produces the most distressing cholicks, dyspepsia, and other affections of the stomach. I cannot see why flour should not be taken to sea, and fresh bread baked on board, as has always been the case in the French navy. Indeed, it has also been done in the English navy, and always with eminent advantage. It is very practicable to bake bread even daily on board ship. I have eaten hot bread every morning for two months at sea. It is true, it was baked in small quantities; but when baked for the men, it would not be necessary to have more than one batch baked a week. Flour can be rammed tight, so as to occupy as little space as biscuit; and a very good substitute for yeast has been proposed by

Mr. Turnbull. His directions for preparing it for sea are as follow : “ Let a quantity of barm or yeast be spread thin on boards, and exposed to a moderate degree of heat, so that the humidity may be evaporated, and that it may be left in a dry granulated state. It must then be put into phials well corked and sealed. Let there be next a strong solution of wort, into which throw a small proportion of the above powder ; and in the nineteenth degree of Fahrenheit, a brisk fermentation will soon be excited, perfectly qualified for every purpose for which barm is employed.”

I would propose then to amend the solid ration, by substituting, when the weather will permit it, at sea, fresh bread for biscuit ; and cannot help believing, that the service would be benefitted, if, while in port, the crews of ships were *always* furnished with soft bread from shore. When it is necessary to use biscuit, it should always have a cast in the oven.

I would propose the following ration-bill, in place of the one by which the seamen and others of our navy are now victualled :

*Scheme of Diet for promoting and preserving the Health and Morals of the Seamen in the  
U. S. naval service, by Wm. P. C. Barton.*

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OBSERVATIONS ON THE

DAYS OF THE WEEK.	POUNDS OF				OUNCES OF							HALF PINTS OF				GALLS.
	Beef.	Pork.	Flour.	Suet.	Biscuit.	Fresh Bread.	Cheese.	Butter.	Sweet oil.	Raisins.	Peas.	Rice.	Molasses.	Vinegar, or lemon-juice.		
Sunday, . . .	1 $\frac{1}{4}$	..	1 $\frac{1}{4}$	..	14	..	..	..	..	4	..	..	..	..	1	
Monday, . . .	..	1	..	..	..	16	..	..	..	..	1	..	..	..	1	
Tuesday, . . .	1	..	..	..	14	..	2	..	..	..	..	..	..	..	1	
Wednesday, . .	..	1	..	..	..	16	..	..	1	..	..	1	..	..	1	
Thursday, . .	1 $\frac{1}{4}$	..	1 $\frac{1}{4}$	1 $\frac{1}{4}$	14	..	..	..	..	2	..	..	..	..	1	
Friday, . . .	..	..	..	..	..	16	4	1	..	..	..	1	1	..	1	
Saturday, . . .	..	1	..	..	14	..	..	..	..	..	1	..	..	..	1	
Weekly allowance,	3 $\frac{1}{4}$	3	1	1 $\frac{1}{2}$	56	48	6	1	1	6	2	2	1	2	7	



## SECTION XI.

*On the Ventilation and Warming of Ships.*

I notice these subjects, because I well know that they are not sufficiently attended to in our navy. I am acquainted with no part of the internal economy of our publick vessels so defective, as the ventilation and warming the decks, &c. I have often known a ship's crew half smothered by the closeness of the berth-deck, and sweltering with heat, when a few wind sails, which might have been rigged up in ten minutes, would have rendered their situation comfortable and healthy. What, under such circumstances, must be the situation of a sick man, labouring under a violent inflammatory fever, in which fresh and pure air are so necessary to a cure? And what must be the feelings of the medical officer, who sees his patients burning with a fever, necessarily kept in an atmosphere sufficient of itself to beget such a disease?

The ventilation of a ship consists in keeping the *hold* dry, by introducing pure and fresh air into it, and occasionally fires—in freeing the *well* from foul air and moisture, by the same means; and in admitting a constant current of fresh air through all the decks and apartments of the ship. This is very practicable by means of wind-sails, with which every ship is abundantly supplied, though they are in some not frequently enough used. I think communications might be made from one deck to another by means of tin or copper tubes, for the purpose of ventilation. They might be furnished with plugs air and water-tight, so that in

bad weather the rushing of water into them might be prevented.

The decks should always be dried after being wetted by bad weather, or in cleaning—by means of fires. They should never be suffered to dry of themselves; for this process is slow, and the moisture exhaled while it is going on, induces disease. Every ship should be furnished with a sufficient number of small close-stoves, with pipes or flues communicating with the hatchways, in the winter season. The berth-deck particularly should be thus warmed. If this practice was followed, it would, I am persuaded, be the saving of the lives of hundreds.

Fumigations have been strongly recommended for the purpose of purifying the air of ships. The opinions of surgeons on the subject of their efficacy in producing this effect, are very diverse and opposite. This is no place to enter into the merits of either question, though I have no hesitation in saying, for my own part, that I have no faith in them. For this reason, I never employed them while on ship-board. Yet as there are many surgeons who advocate this fumigating process, and perhaps too with good reason, I have added the fumigating articles in my tables of proportions, but have mentioned that they are to be taken or not, at the option of the surgeon.

The plan most to be depended on for preserving ships pure and healthy, is keeping the decks dry by fires—shutting the windward ports in bad weather—introducing a constant current of fresh air throughout every part of the ship, especially during the night, by means of wind-sails, &c.—whitewashing the berth-deck, &c. frequently—and never washing the decks in wet or cold weather.

## SECTION XII.

*On the impropriety of frequently Wet-scrubbing the Decks in the Winter season.*

I am acquainted with no practice more pernicious to the comfort of the men, or more fraught with disease and destruction of life, than that of perpetually drenching the main, gun, and berth-decks, with water. The mistaken idea of cleanliness that leads to this practice, cannot be too severely reprobated. It is not at all necessary for me, after all that has been written on this subject by English naval writers, to enter extensively into a consideration of the numerous inconveniences and dangers consequent upon this ill-judged practice. It is not the object of this work to dive into medical disquisitions—but to call the attention of the officers of the navy to such points, relative to the internal economy of their ships, as call for reform. I speak now particularly of the wetting the decks in the *winter season*. I have seen the most destructive sickness induced by this practice indiscreetly followed during all kinds of weather, rainy, moist, wet, and cold; and I have no hesitation in saying, that in one instance I saw a contagious fever produced by it. Yet I was never able to convince any one of the sea-officers with whom I conversed on this subject, of the injury resulting from this custom.

The following letter will show what ground I have for the assertion just made, that wet-scrubbing the decks has produced, within my own knowledge, typhus contagion on ship-board.

*Frigate United States, Annapolis Roads, April 24, 1810.*

SIR,

Since your absence, the ship's company has become extremely unhealthy, and I am sorry to state to you, the prevalence of a genuine epidemick typhus fever. Of this fever, we have lost three men—one, a marine, who was taken ill the day before our arrival in these roads, died in four days—another, a land-man, on the fifth day; and yesterday, two hours after his admission on the sick-list, one of the painters. There are at present fourteen men ill with this fever,\* six of whom were taken this morning. The other patients are afflicted with inflammatory catarrhs and rheumatisms, and we have four convalescents from pleurisies. But since the appearance of this fever, they have all partaken in some degree of its typhus symptoms.

With respect to the cause of this epidemick, I am entirely at a loss to give you any correct opinion, at this time. I think, however, a change of the diet of the crew, for fresh provisions and greens, would have some effect in checking its progress. I think, too, that were the berth and gun-decks, particularly the former, less often wet-scrubbed, the cases of typhus, so numerous now, would be less frequent.

I am, sir, respectfully,

Your obedient servant,

WILLIAM P. C. BARTON.

Com. DECATUR.

Trotter says, that in the winter of 1793-4, a contagious fever broke out in the Russel, and is of opinion, that the frequent washing of the decks (three times a week) principally caused it. Such is my conviction of the bad

\* The number was afterwards increased to *forty*.

effects of this practice, that I do not hesitate to assert : that it would be far better for the health of the men, if the berth-deck was never wetted from November till April.—How then will this deck be kept clean, it will be asked? I answer, by *dry-rubbing with stones and sand*, according to the usage in the best regulated ships in the British navy, and in some few of our own. The gun-deck might be washed once a week, always choosing a fine dry day for the purpose, and the main-deck twice. In the intervening time let them be dry-rubbed. When it is necessary to order the men to this business, the officer of the deck should see that every man takes off his shoes and stockings, and rolls up his trowsers. Those who have good strong boots may be exempted from this regulation. Perhaps it would be adviseable for the purser to lay in among his slops, a sufficient number of boots of this description, or such as are known by the name of *ditchers' boots*. If this plan was adopted, the necessity for washing the decks in bare feet would be done away, and this would be not a little desirable. For though it certainly is better that the men should do this, than keep on wet shoes and stockings all day, yet even this exposure to cold and moisture is pernicious. It is a practice only to be advocated, as the *least of two evils*.

In the British navy, where the internal regulations of the ship are always made with a view to the health and comfort of the men, I know that during the winter season, the decks of ships are now seldom or never wetted, but are kept clean by dry rubbing and sweeping. This I learned from actual observation, (having spent part of a winter in the midst of the English fleet at Plymouth, and the remainder in the vicinity of the fleet at Spithead,) as well as from the information of



the surgeons and officers with whom I became acquainted. I will conclude these few observations on the impropriety of continuing this practice, by inserting a letter from one of the physicians of the English navy, in answer to some inquiries I made of him on this subject, and respecting dress, and the means used to guard boats' crews, who went on duty before breakfast, against the effects of inanition.

*Royal Hospital, Haslar, 3d May, 1811.*

MY DEAR SIR,

I have the honour to acknowledge the receipt of your polite letter of the 24th ult. and should have immediately answered it, but it was only to-day that I have been able to procure the seamen's ration, as established in the navy, which I herewith enclose.

I cannot express how highly sensible I feel the sentiments of esteem you have done me the honour to make. Permit me to assure you, that it will afford me much satisfaction, when you again visit this country, to have the pleasure of seeing you, and being more intimately acquainted.

With respect to the first query, I believe it is the universal practice throughout the navy, previous to washing decks, for the seamen to be bare-footed—it would otherwise be very prejudicial to the health of men, producing catarrhal complaints. Seamen are in general an improvident class of men, and if attention was not strictly paid by the officers to make them shift their clothes when wet, they would not do it of their own accord.

2d. During the winter season, in cold climates, the ships' companies are always served with flannel shirts or banyans, and flannel drawers, blue jackets and trowsers. Although there is no regulation laid down

by government relative to dress, yet it is common in all ships, where the health of seamen is at all considered of any importance, to make them dress according to the climate they are in.

3d. I believe it was formerly much the practice in the East and West-Indies, to give boats' crews (when going on duty early in the morning, to wood or water) a dose of bark with wine; but I think a better prophylactick would be to have a warm breakfast of cocoa, which is usually supplied in these climates in lieu of butter and cheese.

With every wish for your health and prosperity,

Believe me to be, with great esteem,

My dear sir,

Your's most sincerely,

JOHN GRAY.

DR. BARTON, *Surgeon of the U. S. frigate Essex, Cowes, Isle of Wight.*

### SECTION XIII.

*Of the impropriety of shipping men for the U. S. naval service, without a previous examination of them by a Surgeon or Surgeon's-mate.*

It is well known that an advance of two months pay is made by the recruiting-officer to every seaman and landman he may ship for the service. This advance is authorized by government. Now it not unfrequently happens, when these men have not been examined by a medical man, that after this advance has been expended, which commonly happens in a few days, and after the government has paid, or is charged with, a considerable sum for transporting such men to the port

at which the vessel they are destined for may be stationed, they are discharged on the report of the surgeon of the ship, after inspection, as unfit for service. This unfitness for the most part is on account of ruptures, sore legs, or confirmed cases of lues venerea. What is the consequence of such a measure? Either government or the recruiting-officer must lose the amount of the advance and travelling, and other incidental expenses. It is not just that the recruiting-officer should be thus oppressed, since government did not order to his rendezvous a medical officer, to inspect the men. And if the government must bear these expenses, what ruinous devastations will not be made upon the treasury, by a repetition of such cases! It has happened to me to be under the necessity of reporting unfit for ship-service, at least 20 men, who had never performed one day's duty on ship-board, or elsewhere, in one year! The recruiting-officer was certainly not to blame for this—since no medical officer had been attached to his rendezvous. Yet this does not set the matter in a better point of view. The error exists, and it is necessary to correct it.

It should be a standing rule, never to be dispensed with, that to every recruiting station should be attached a surgeon or surgeon's-mate, whose duty it should be to inspect all men offering for service. He should have it in his power to reject all those he may deem unfit for service. That this duty may be the better performed, the medical officer should be one who has been to sea some time, since he can best tell what kind of men are fit for the service.

He should reject all those who have, 1. Ruptures; 2. sore legs, or *the marks of sores on them*; 3. all who have the venereal disease badly, (and, if required for immediate service, all who have it in any de-

gree); 4. all who have any defect in their limbs; 5. all who appear of weak and melancholy temperament.

The necessity for this strictness is felt by every medical man who has been to sea. In the first place, if ruptured persons are admitted on board, the cost to government in trusses, is very heavy; besides which they frequently make this complaint an excuse to *skulk*, and it is very difficult to ascertain whether real or feigned pain causes the request for exemption from duty. It would be inhuman to proceed in such cases, on an uncertainty.

In the second place, it may be remarked, that a sore leg is an everlasting plague to the surgeon, a vexation to the sea-officer, and a never failing plea for inability to perform duty, on the part of the man himself.

Thirdly, the venereal cases, when bad, generally deprive the ship of the services of the men, for two or three months; and the delicacy of the constitution, and its liability to disease, by exposure to cold and dampness, after a cure from this complaint: render the efficiency of such men still more precarious.

Fourthly, defective limbs, such as stiff joints, one leg or one arm being shorter than another, the club-foot, &c. &c. not only interfere with the actual performance of duty, but are unsightly objects on ship-board. Every thing that offends the feelings in this way, should, if possible, be avoided.

And, lastly, weak and melancholick men are the first subjects, and generally are the victims of typhus contagion. The sea-life engenders low spirits itself, without choosing or taking men constitutionally predisposed to dejection and despondency. This caution is particularly applicable to landmen. I have seen some die, who a short time before, in perfect health,

assured me that they could not live long, so much did they desire to get on shore. These were all melancholick men.

I have said, none should be passed who have the *marks of sores*. This may appear an unnecessary caution. I know it, however, to be otherwise. Old ulcers, and of the worst kind, too, frequently *skin-over*, or are slightly cicatrized, so as to prevent the man from coming under the head exemption for *sore-legs*. Yet in these cases the slightest scratch or bruise (which can never be avoided by the most careful, on ship-board) will bring on most extensive ulceration. While I was attending physician to the army in Philadelphia, I frequently refused to pass men with such marks. The officers, some of them, offended with my fastidiousness, took the responsibility of enlisting these men, who had, they said, "*perfectly sound legs*." In the course of their riots and broils while spending their bounty-money, it always happened that the skin became abraded—ulceration came on, the men did not pass general muster, and were of course discharged.

I cannot too strenuously urge the necessity of examining strictly, for the existence of ruptures. This complaint is more common than is generally imagined. In the first year of the present war, I examined two thousand recruits in the city, and from the neighbourhood of Philadelphia. Twelve hundred only of this number did I pass as able-bodied men; and of the rejected number, 800, *more than two-thirds were refused on account of ruptures*. These facts therefore will, I hope, establish the absolute necessity for the good of the service, of amending the recruiting plan as I have proposed.



## SECTION XIV.

*Miscellaneous Observations on the internal Arrangements of Ships, and some necessary Regulations in their Government.*

Under this head, I shall throw together a few cursory and unconnected remarks on the structure of some part of the publick ships, connected with the surgeon's department, the health of the men, and the comfort of the sick.

1. The sick-bay in double-decked vessels, is usually placed amidships, and is separated from the other part of the berth-deck only by means of a tarpaulin, or canvass curtain, and sometimes not even by these.

From the situation of the bay, then, it is necessarily exposed to the damp air of the cable-tier, as well as the cold air of the mid-hatch above it, which is generally open, at its after end; and to the unpleasant smell of the fore-hold, where the beef, pork, &c. are kept; as well as the cold air that blows down the fore-hatch, at its forward end. The screens or curtains of which I have spoken, are but ineffective barriers to these unhealthful currents. Added to this, the berth-deck, according to the existing usage of the navy, is frequently, if not daily, wetted. Can any place, then, be conceived of, better calculated to injure the patients and distress the surgeon, than such a sick-bay?

This subject, then, demands the attention of all those connected with the direction of the internal structure of ships.

I see no reason why the sick-bay should not be constructed farther aft, or chock forward: that is to say,

between the steerage and root of the main-mast, or forward of the fore-mast. It should, too, be encompassed or partitioned off by moveable bulk-heads, lined with baize, and should be ventilated by tubes from the gun or main-decks. It should be furnished with small and well-slung cots, in such number as it will conveniently contain. In the summer season, perhaps, it would be more conducive to health and comfort, to have the sick-bay amid-ships, where it now usually is placed ; but I have seen too much of the inconvenience and danger of placing sick men in this place in the winter season, not to think it highly necessary that some change should be made.

2. The paint-room should be so constructed, that the noxious vapour arising from the white lead, green paint, &c. which are generally kept on board, cannot reach the place allotted for the men to sleep in. This caution is particularly meant for the commanders of single-decked and small vessels. I was once called to visit the crew of the late U. S. brig *Nautilus*, at Norfolk, the greater part of which was taken down with the most violent colica pictonum I ever saw—the surgeon himself narrowly escaped with his life. Upon inquiring into the cause of this disease, I had no hesitation in pronouncing its origin to have been derived from the paint, which was put in tanks *en masse*, at the forward part of the berth-deck. The vessel being attached to commodore Decatur's squadron, upon my report, he directed an alteration to be made in the paint-room.

3. When ships are laid up in ordinary, care should be taken in the choice of a place for this purpose. It should not be one exposed to damp and marshy exhalations ; for by long exposure to these, however securely the ship may be covered, the timbers imbibe so much moisture, that for a considerable time after be-

ing fitted out and commissioned for service, they exhale a dewy vapour. This caused in some of the French and English ships, the most dreadful havoc among the men. It is therefore an object not unworthy of attention.

4. The lower-deck ports should all be furnished with *bunting-sashes*. The air-ports should be opened as often in the summer season as the weather and nature of the service in which the ship may be engaged, will justify or admit. Wind-sails should be rigged up in every hatchway, with branches communicating with the holds, cable-tier, &c. in a warm season, whenever the weather will permit. This is attended to in some of our ships, but, I have reason to think, not rigidly enough in others.

5. Boats' crews sent on duty on shore, to wood or water, or for other purposes, early in the morning: should always receive their breakfast previously to their going. When it is necessary to send them on morning duty in marshy situations, they should be allowed a *warm breakfast*. It is well known to naval surgeons, that boats' crews are always more liable to disease than the rest of the crew. Every regulation, therefore, that has a tendency to guard against this circumstance, should be considered with attention.

6. A sergeant or corporal of marines should always superintend the exchange of ship's provisions by the men, for articles brought along-side in *bom boats*, for this traffick. Without this superintendence, a practice that might be highly conducive to the health of the crew, may be productive of very pernicious consequences. For sailors *will* exchange any of their necessities for spirituous liquors, if not closely watched. This regulation is adopted in our best regulated ships; but in others it is not strictly followed.

7. When the ships are anchored in our rivers, the men should be prevented, as far as practicable, from drinking water from along-side. And the ship's water should never be supplied from these sources.

The putrid vegetable matters, &c. which these rivers contain, render the water not only cathartick, but I have known it to induce the most severe and obstinate cholick, and dysenteries. It spoils more readily than spring-water, which of course would make it improper to fill for ship's use from it.

8. That dancing and musick among the men be promoted and encouraged as frequently at sea, as the duty of the ship will permit. These amusements beguile the time, and make the sailor more contented with his situation.

9. The most willing co-operation of the commanders and other officers of ships, should always be afforded to the surgeon, in any of his plans for meliorating the condition of the men, and promoting the convalescence and cure of the sick.

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## ERRATA.

Page xiii, line 5 of the note, for "*philantrophist*" read *philanthropist*.

Page xiv, line 4 from the top, for "*harassment*" read *embarrassment*.

Page 8, line 12 from the bottom, for "*conduction*" read *direction*.

23, first line after Section III. for "*administra*-" read *administration*.

25, line 1, for "*but*" read *and*.

25, line 14 from the top, for "*deposit*" read *deposite*.

29, line 12 from the bottom, ditto.

35, line 14 from the top, ditto.

65, line 5 from the bottom, for "*is*" read *are*.

same line, for "*object*" read *objects*.

103, line 7 from the bottom, for "*enteries*" read *entries*.

121, line 6 from the bottom, for "*entitles*" read *entitle*.

166, line 8 of the text from the bottom, for "*hospital*" read *hospitals*.

190, line 11 from the top, for "*is*" read *was*.

219, in the note to the ration-bill, (of some few copies,) second line, insert *one-half* before the word "*pint*."



